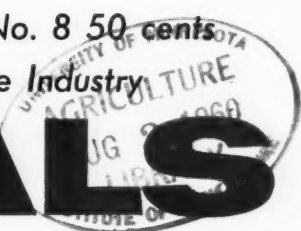


# FARM CHEMICALS

August Volume 123 No. 8 50 cents

Pioneer Journal of the Industry



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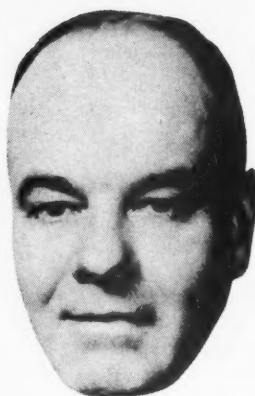
**Fertilizer dealers  
expand markets with  
'agronomic' approach**

Magruder Check  
Sample Program  
Check System Aids  
Control



#### **FRED ARNOLD**

is P.C.A.'s Sales Representative for Virginia, North Carolina and South Carolina. He received his education at the University of Alabama and Yale University, in addition to many years of experience in sales and management, all enabling him to better serve the fertilizer industry.



#### **JOE SCROGGS**

is P.C.A.'s Sales Representative for Tennessee, Western North Carolina and Georgia, has attended Piedmont College and received a B.S. in agriculture from the University of Georgia. Also qualifying him for his job are years of experience in agricultural chemicals and the teaching of vocational agriculture.

## **Your Men on our payroll**

These men are two of the members of the P.C.A. sales team serving the fertilizer industry. While they are on our payroll, their chief responsibility is to you. Selling potash is but part of their job; the most important part is furnishing you with whatever service and information you require . . . both have the experience and background to do the job well. The P.C.A. salesman is your man . . . make good use of him.



**New 60% Standard Muriate**  
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*Southern Sales Office . . . Candler Building, Atlanta, Ga.*



One of Kentucky's newer fertilizer plants, Tri-State Chemical Company in Henderson has enjoyed impressive yearly sales increases since they started business in 1954. With the installation of new granulating machinery, their volume should reach 11,000 tons this year.

V. D. Scott (above) serves progressive Tri-State Chemical Company as Vice President and Treasurer.

## Tri-State Chemical Company Holds Down Costly Corrosion With SPENSOL GREEN:

Anytime corrosion causes your equipment to break down, your profits suffer. Especially, when you have ever-increasing production schedules to meet as does Kentucky's Tri-State Chemical Company. That's one reason why this expanding fertilizer manufacturer uses SPENSOL GREEN, the non-corrosive ammoniating solutions.

Corrosion control pays off big in terms of reduced maintenance and repair bills. Without it, corrosive solutions cost you money daily. You can't see the damage being done. It goes on undetected inside

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**Why risk it? SPENSOL GREEN** offers you greatly improved corrosion control at no extra cost. Compared with competitive brands of ammoniating solutions, SPENSOL GREEN's advanced corrosion inhibitor proved to be at least 54% more effective. Check these laboratory results yourself:

Sample Number	Corrosion (In. Per Year)	Variation From SPENSOL GREEN
Brand A	.021	91%
Brand B	.024	118%
Brand C	.300	2,630%
Brand D	.022	100%
Brand E	.234	2,030%
Brand F	.017	54.5%
Old SPENSOL	.017	54.5%
SPENSOL GREEN	.011	....

**Double the life** of your equipment and cut corrosion costs by at least half by making your next order SPENSOL GREEN! Contact your Spencer representative now.

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#### MEMBER BUSINESS PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, **FARM CHEMICALS**, serves primarily those persons responsible for management, marketing and production. It has a qualified circulation for selected executive and supervisory persons within specified segments of these industries, as well as in certain closely allied fields. Subscription rates to all others are: in the U.S., its possessions, Canada, Cuba and Panama: \$6.00; in other countries: \$7.50. Current issue 50 cents. Back issues \$1.00. (Current issues become back copies on the 5th of the month following publication.) Established in 1894 as *The American Fertilizer*.

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# FARM CHEMICALS

Vol. 123 No. 8 August 1960

## MARKETING

- 18 Organize Your Time *O. C. Merrett*
- 24 Sell A Mental Concept *Ralph Everett*
- 26 Reaching the Middle Market *F. E. Hartzler*
- 28 September Rainfall Prospects *Vaughn Havens*

## MERCHANDISING AIDS AND PROMOTION

- 30 Wanted: Agronomically-Oriented Fertilizer Dealers

## SPECIAL REPORTS

- 35 New Tax Reporting *Paul Lockwood*
- 38 SBA Loan Facts *Larston D. Farrar*

## MATERIALS HANDLING AND CUSTOM APPLICATION

- 36 Unit Loads and Bulk Containers

## PRODUCTION METHODS

- 56 The Magruder Check Fertilizer Sample Program and Its Relation to Plant Operation

## TECHNICAL REVIEW

- 58 Monitoring Fluoride Content of Air, Water and Vegetation  
*C. R. McHenry and Hoyt Charles*

## DEPARTMENTS

- 4 What's Doing in the Industry
- 6 Letters
- 12 Washington Viewpoint
- 33 Reader Service
- 40 News of the Industry
- 44 Associations and Meetings
- 44 Calendar
- 46 People
- 49 Government
- 50 Chemicals
- 51 Equipment and Supplies
- 52 Suppliers' Briefs
- 53 Patent Reviews *Dr. Melvin Nord*
- 54 Pests *Kelvin Dorward*
- 64 Editorial: FC Wears a Black Jacket

## THE COVER PICTURE

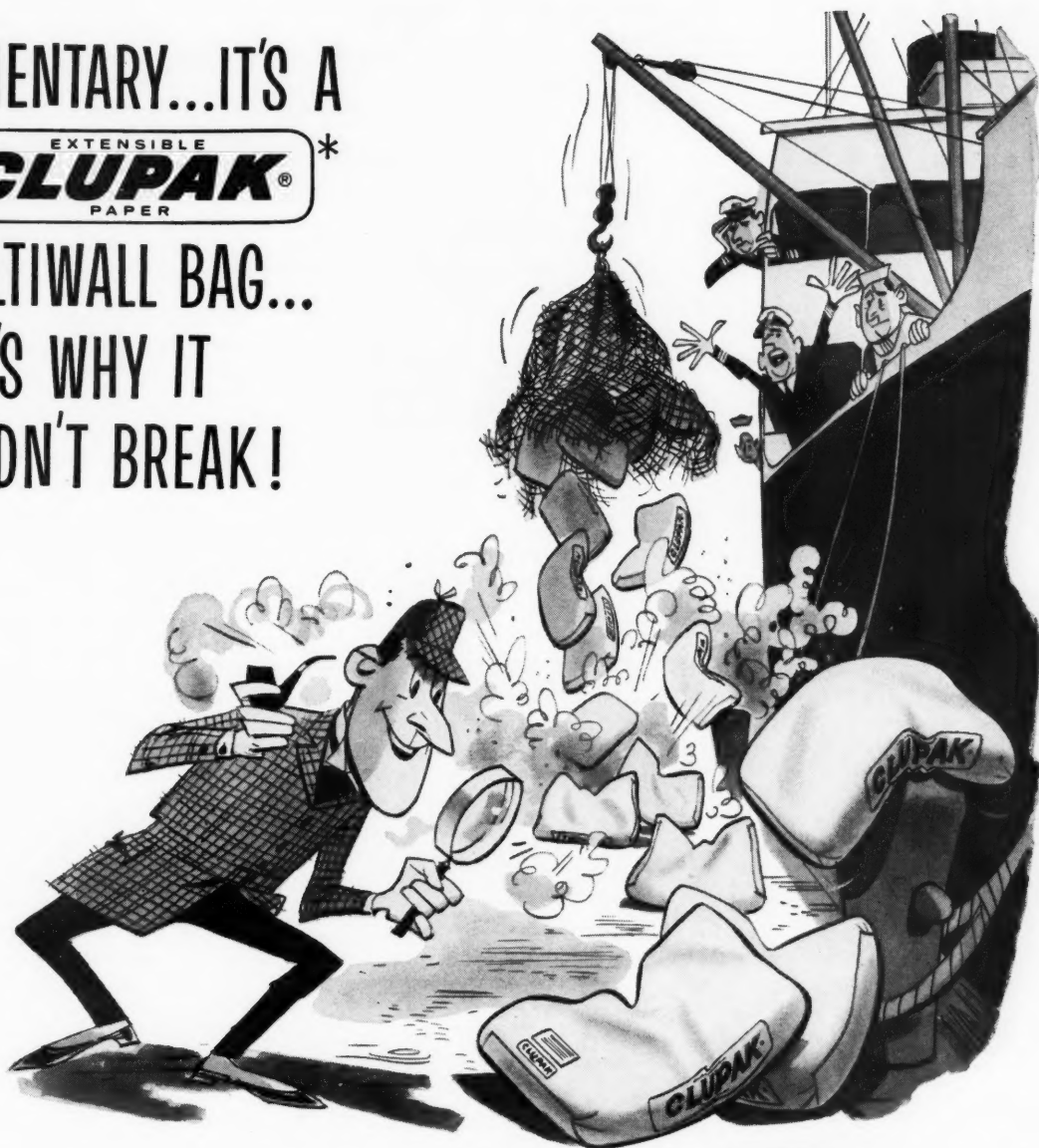
Because soils depleted of vital chemicals cannot be reactivated naturally, farmers must learn how their soils will respond to proper soil management. This was the view expressed by C. E. Kellogg, Agricultural Research Service, Beltsville, Md. Studying a plant with nutrient deficiencies are Dean A. G. Aldrich, University of California, (l); C. E. Kellogg (c), and H. B. Peterson (r), of Utah State Univ. during the meeting of the 11th Annual Pacific Northwest Regional Fertilizer Conference in Salt Lake City, Utah. (Photo courtesy of *Deseret News & S. L. Telegram*.)



ELEMENTARY...IT'S A



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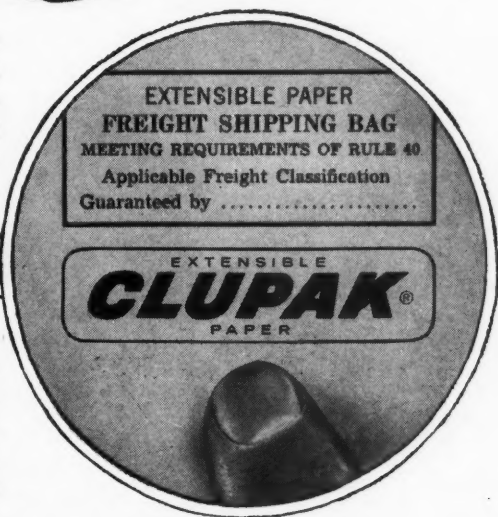


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# WHAT'S DOING IN THE INDUSTRY

F  
C

## SUBSIDIARY OF P.C.A. MERGES WITH PARENT CO.

The recent merger of Potash Company of America Limited, a wholly-owned subsidiary of Potash Company of America, with the parent company was announced in July by John W. Hall, president of both concerns.

Potash Company of America has acquired all of the assets and assumed all of the liabilities of the subsidiary. This does not increase the responsibility of P.C.A. inasmuch as the parent company had guaranteed the obligations of Potash Company of America Limited. It does, however, indicate that the parent company is determined to move forward with the development of the Canadian property.

The shaft of the Canadian subsidiary located near Saskatoon was bottomed at 3,450 feet in June of 1958. The startup operation of the mine and concentrator began in December of that year and the first shipment of potash was made in March, 1959. The ore mined during the startup period was of the satisfactory grade and thickness indicated by the company's extensive drilling and exploratory work. Primarily because of seepage of water

into the shaft it was necessary to suspend operations in the early part of November, 1959.

Cementation Company (Canada) Limited was engaged to control the water flow and secure the shaft. They are now proceeding with the program announced earlier of grouting the entire shaft area. It is estimated perhaps a year will be required to complete the work at a cost of approximately \$900,000.

It is believed this grouting process is a solution to the water problem encountered earlier and will put this property in condition so that it may be brought into successful operation.

## ARMOUR NAMES SIMS, SHARP

James K. Sims, Sr., has been appointed personnel manager of the Armour Agricultural Chemical Company, it has been announced by W. E. Shelburne, president of the fertilizer-manufacturing firm.

Sims was engineering personnel manager for Lockheed Aircraft Corp., Marietta, Ga., from 1951 until his present appointment. Prior to 1951, he was affiliated with the Veterans Administration for five years.

Shelburne also announced ap-

pointment of Thomas E. Sharp as market development manager.

Sharp was with the Research Division of Armour and Company, Chicago, Ill., from 1951 until his present appointment. Prior to that time, he was associated with Standard Oil of Indiana in research and technical sales for 14 years.

## U. S. PHOSPHORIC PRODUCTS ANNOUNCES EXPANSION

The U. S. Phosphoric Products Division of Tennessee Corporation, Tampa, Florida, has announced plans for an expansion of its phosphate processing facilities. The new facilities will increase the phosphate products output of the plant by 50%.

Work will begin as soon as design and engineering is complete, and completion of all work is expected by late 1961 or early 1962.

The program provides for increased production of Triple Superphosphate, Phosphatic Fertilizer Solution, and Di-MoN.

This expansion will continue U.S. Phosphoric Products' position as a leading producer of high analysis phosphate products for the expanding fertilizer industry.

## LINDERMAN JOINS DAVISON

Robert H. Linderman has joined W. R. Grace & Co. Davison Chemical Division as manager of phosphate rock sales and long range planning in agricultural chemicals, it was announced by D. N. Hausman, Davison vice president.

Mr. Linderman was formerly product manager, phosphate rock, for International Minerals & Chemical Corp., at Skokie, Ill.

## STEPAN ADVANCES RHOADS

William S. Rhoads has been appointed sales manager of the newly-formed Industrial Chemicals Division of Stepan Chemical Company. This promotion is a part of the corporate reorganization going on at Stepan. Mr. Rhoads will be headquartered at Stepan's new \$1,000,000 Administrative and Research Center at Northfield, Ill. He was formerly Eastern sales manager for Stepan.

## Meeting Highlights

### THIS MONTH:

#### Fertilizer Safety School

*Park Sheraton Hotel, New York City  
Announced by the New York State School of Industrial and Labor  
Relations with the cooperation of the National Plant Food Institute  
and the Fertilizer Section of the National Safety Council.*


**August 10.** "The Scope of Safety Work" by Professor Harlan B. Perrins, N. Y. State School of Industrial & Labor Relations; "Safety Education and Training Fundamentals" by Professor Perrins; "Personal Factors in Safety—Cases of Unsafe Acts," William C. Creel, N. C. Dept. of Labor.

After lunch, specific safety problems will be discussed. "The Handling of Liquid Materials in the Fertilizer Mixing Program," by Elmer Perrine, Allied Chemical Corp.; "Maintaining Good Order for Safety," Ed O. Burroughs, Jr., F. S. Royster Guano Co.; and "Know Your Accident Problems, Elements, Sources and Effective Measures for Preventing Accidents" by W. C. Creel.

At 3:50 p.m. conferees will be divided into groups for discussion of individual problems. Best problems developed in each group will be assigned to another group for consideration.

**August 11.** During the morning, supervisors will hear Kevin Kelly, B. F. Goodrich Co., discuss "Safety Organization—The Leadership and Responsibility for Establishing an Effective Safety Program"; and Professor Perrins on "The Supervisor as a Leader and Teacher."

The sessions will close with a luncheon.



**SQ<sub>2</sub>D<sub>2</sub>TA**

**X**

## The **DAVISON** formula that multiplies your profit potential

There's a formula for practically everything in the fertilizer industry. There is even one for PROFIT—the exclusive Davison formula SQ<sub>2</sub>D<sub>2</sub>TA.

It is symbolic of the *extra effort* put into every Davison product. With every carload of phosphate you get a generous shipment of properly proportioned amounts of Service, Quality, Dependability, Delivery and Technical Assistance . . . all working together to help you realize a higher profit on your operation.

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**W.R. GRACE & CO.**  
DAVISON CHEMICAL DIVISION

BALTIMORE 3, MARYLAND





# LETTERS

**F  
C**

## SALESENSE SERIES

Los Banos, Calif.

The articles appearing in the July issue of FARM CHEMICALS Vol. 123 No. 7 under the heading of "Plug Up the Leaks" by O. C. Merrett and "The Professional Salesman's Plan" were so well written and educational that we are sending our check of six dollars to cover six more copies, to be used by our employees.

Also enclosed in the same check you will find \$3.25 for the 1959-60 Successful Selling series and \$6 for one-year subscription to FARM CHEMICALS magazine

Sincerely,  
BERNARD A. NEGRA  
INLAND AIRCRAFT CO.

Ambler, Pa.

In the June issue of your FARM CHEMICALS magazine, there is an article under marketing, "Knowledge Makes the Difference!"

We would like very much to obtain 50 copies of this article if it is at all possible, or 50 complete copies of the magazine if this is more practical.

Very truly yours,  
JOSEPH H. TORCHIANA  
Advertising Manager  
AMCHEM PRODUCTS, INC.

Albert Lea, Minn

Would you please send me 15 copies of the article "Plug Up the Leaks in Your Sales Plan" which was in your July Vol. 123 No. 7 issue. I thought it was real good

and want to pass it to our sales people.

Very truly yours,  
M. A. GLASS  
Manager  
SMITH-DOUGLASS CO., INC.

## APPLICATION EQUIPMENT

El Paso, Tex.

Your April 1960 issue of FARM CHEMICALS contained an article under Materials Handling on page 33 titled "Pesticide Application Equipment."

We could use 500 reprints of this article at the earliest possible date. If they are available, please mail this number to this office.

Yours very truly,  
JOHN IVEY  
President  
SOUTHWEST FERTILIZER  
& CHEMICAL CO.

## ONE USE FOR REPRINTS

St. Paul 1, Minn.

Attached is order form for FC reprints and our check in the amount of \$11 to cover their cost.

It is our desire to use some of this material in a fertilizer conference.

Sincerely,  
GEORGE FAILES  
Agronomist  
Feed, Fertilizer & Chemical Div.  
FARMERS UNION  
CENTRAL EXCHANGE

San Francisco, Calif

Upon receipt of our May copy of FARM CHEMICALS, we took the occasion to advise you of our change of address, effective May 1, 1960, to our present location.

Unfortunately the June issue has not yet been received by us, and our purpose in writing is to ensure that the requested change of address has been made effective by your (circulation) department.

Your magazine is very highly regarded by us, especially in view of your recent series of articles on sales development and credit practices, and we would not want to miss any of the forthcoming issues.

As a matter of fact, if you have a copy of your June issue which could be forwarded to us to replace the missing copy, your action would be very much appreciated by us.

Yours very truly,  
H. G. DOHERTY  
BALFOUR, GUTHRIE &  
CO., LTD.

Minneapolis, Minn.

I should either like to subscribe or be put on the mailing list for FARM CHEMICALS. I think you do a wonderful job in the farm chemical field, which is one area of our merchandise operation.

Sincerely yours,  
D. A. WILLIAMS  
Merchandise manager  
PEAVEY ELEVATORS

## DELEGATES FROM U. S. AND CANADA ATTEND CONVENTION

Some 200 delegates from across Canada and some from the United States will attend the 15th annual convention of the Canadian Fertilizer Association at the Manoir Richelieu, Murray Bay, Que. from August 21 to 25 inclusive.

Among the papers to be presented will be one on forest fertilization by Dr. Paul L. Aird of the Canadian International Paper Company, Grenville, Que. Dr. Aird will report on the experiments in tree fertilization being conducted at his company's Harrington forest farm and other locations.

Dr. W. A. Garman of the National Plant Food Institute, Washington, D. C., will report on the eighth international grassland congress held in England.

L. R. Daigneault of Cockfield Brown and Company, Montreal, will speak on "preparing the soil for sales" and L. A. Lyone Heppner of the Confederation Life Association, Montreal, will address the conference on "you don't sell things, you sell people."

FARM CHEMICALS

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*Proceedings-Complete with questions and answers*

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- ▶ To put the marketing concept to work
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- ▶ To adapt Research to Sales Planning
- ▶ Important it is to farm chemicals manufacturers
- ▶ Marketing research works in other industries

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Tennessee's **Tri-Basic Copper Sulfate** is micronized to a mean particle size of 0.5 micron to give greater covering power—It is guaranteed to contain 53 % copper as metallic.

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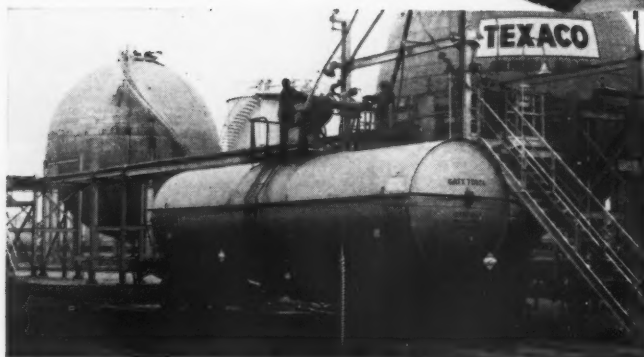
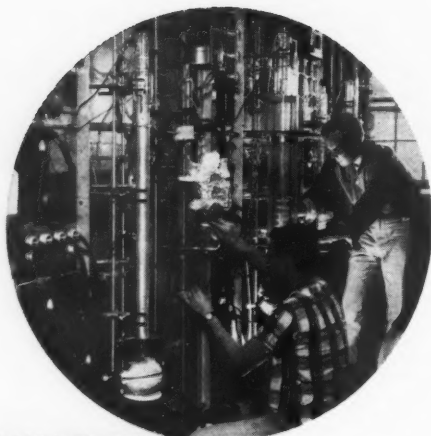


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## QUALITY

Texaco offers chemical solutions that consistently meet your formulations' requirements as to ingredient quality.



## AVAILABILITY

because of its centrally located Lockport (Ill.) facility, Texaco provides immediate delivery of both nitrogen solutions and ammonia (including 50% aqua solution).



To  
**BALANCE**  
fertilizer

formulations

...begin with this Texaco formula

## SERVICE

Texaco offers a wide range of technical services to help you break a production bottleneck or develop a new product.

Here's a formula that can help you balance all the factors effecting fertilizer formulations. The ingredients? You can see them above: Texaco quality, availability, and service.

But why not weigh the advantages of this service yourself? Write for details—and our free 40-page manual on ammonia and nitrogen solutions—to Texaco Inc., *Petrochemical Sales Division*, 332 South Michigan Ave., Chicago 4, Ill., or 135 East 42nd Street, New York 17, N. Y.

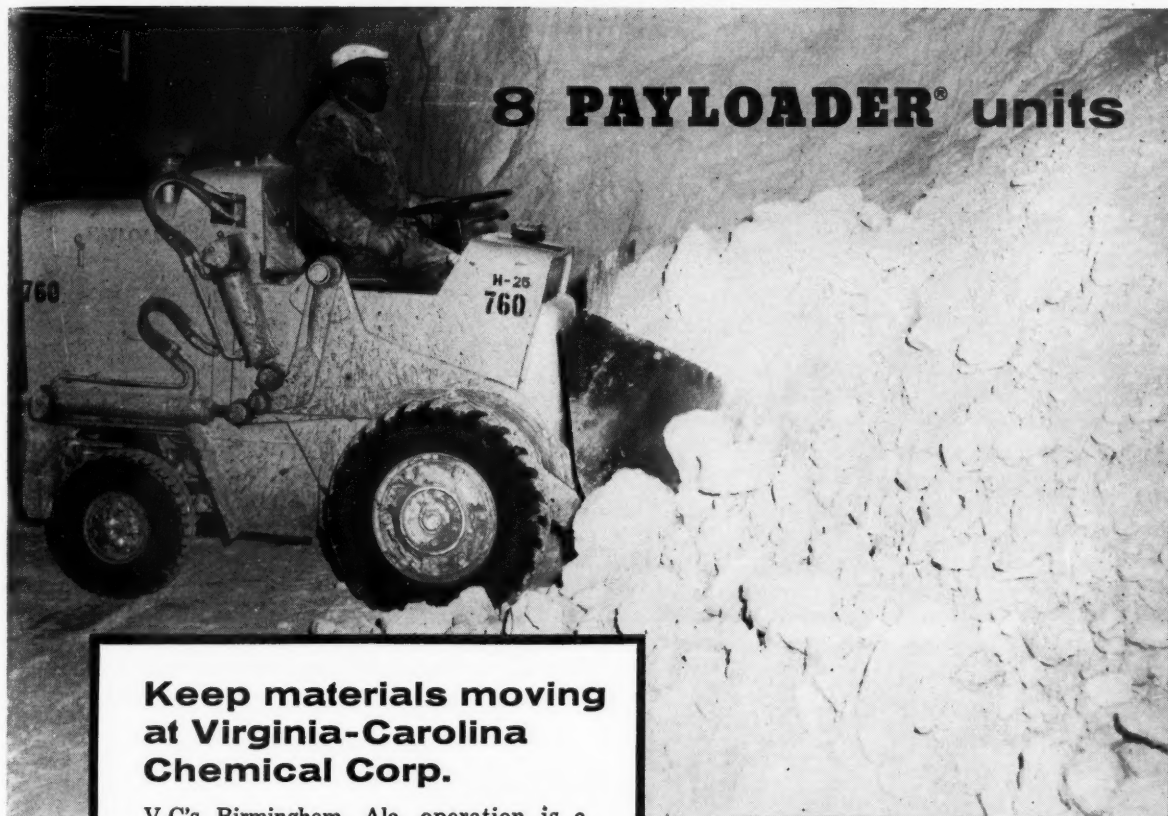
Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV



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AQUA AMMONIA, ANHYDROUS AMMONIA, NITROGEN SOLUTIONS, DIISOBUTYLENE, ODORLESS MINERAL SPIRITS, NAPHTHENIC ACID, PROPYLENE TETRAMER AND RUST INHIBITORS

FARM CHEMICALS



## 8 PAYLOADER® units

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J. F. Lotz, Plant Superintendent says of his two newest units, "The Model H-25 'PAYLOADER' units are versatile and fast in all-around plant operations. They have twice the delivery capacity of the older Model HA's, and are faster in the storage pile."

Speed, capacity, maneuverability and ease of operation are combined in the H-25 for big production all day long. With only 6-ft. turning radius, it features 2,500 lb. operating capacity, power-shift transmission, torque-converter drive, power-steering, power-transfer differential and fast, powerful hydraulic bucket control. Closed, pressurized hydraulic system plus filters and seals throughout the machine assure effective protection in dusty conditions.

A nearby Hough Distributor is ready to show you what a "PAYLOADER" can do for your bulk materials handling.

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LIBERTYVILLE, ILLINOIS  
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



4,500 lbs. of breakout power easily digs full bucket loads of hard super phosphate.



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B-A-1

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☐ Larger models — to 12,000 lb. operating capacity

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Title.....

Company.....

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City..... State.....



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*Like all the men and women in Cyanamid's phosphate operation,  
his only business is phosphates for your mixed fertilizers*

He's one of several hundred Cyanamid people who mine, process, research, deliver and service phosphatic materials for your acidulation and mixed fertilizer business. These people put Cyanamid's more than 40 years of phosphate experience into the kind of products and services you can use. Take advantage of both. Pick up your phone and call your Cyanamid representative.

### **Services you can use**

**Traffic Service:** Cyanamid traffic specialists are ready to route and ship your orders without delays. Their knowledge can save you money and can make your oper-

ation run even more efficiently.

**Technical Service:** Cyanamid's staff of technical experts are on 24-hour alert. Often, what are new problems to you are solved problems to them. Make your formulation and production problems theirs. That's their job.

**Sales Service:** Cyanamid sales representatives are available to work with and for you in expanding present markets or in establishing new markets.

**Products that serve:** Cyanamid's only phosphate business is mining and manufacturing the highest quality products for your mixed fertilizer requirements.

- Florida Natural Phosphate Rock.

- TREBO-PHOS® — Triple Superphosphate.

- Phosphoric acid for acidulation. *To manufacture fertilizers that sell... mix with Cyanamid's phosphates and service.*

American Cyanamid Company, Agricultural Division, N. Y. 20, N. Y. \*TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.



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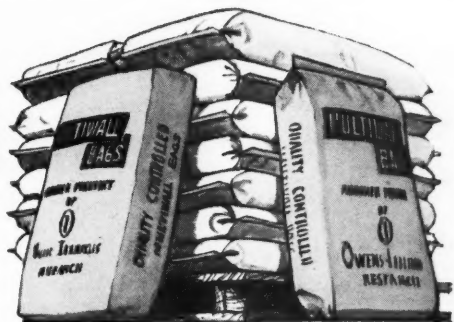
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Think of the maker when you buy any product . . .  
**It pays to buy bags from a packaging specialist!**

SO MUCH MORE than just the ability to produce it must be considered when you buy any manufacturer's product. It must be backed by experience, to assure you that the product is properly designed to fit its specific uses . . . by dependability to assure you of exactly what you want, when and where you want it . . . and, of course, by quality.

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 Toledo 1, Ohio



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 AN **I** PRODUCT

**OWENS-ILLINOIS**  
 GENERAL OFFICES • TOLEDO 1, OHIO

# WASHINGTON VIEWPOINT

► *Although they approach the job from different angles, farm planks of both political parties pledge acceleration of farm production in fewer hands.*

► *Crop production this year will be another record, equalling 1958 and 1959 totals.*

**The farm chemicals industry is on notice**—officially—to get prepared for the inevitable in agriculture. The inevitable in this case is drastic revision of sales patterns from the traditional shotgun approach to a rifle-shot approach to selling the farm market. While the need for a change *eventually* has been pointed out repeatedly here because of the long-term drift to larger and fewer farms, it now looks as though it will be speeded up considerably. Farm planks of both political parties pledge an acceleration of farm production in fewer hands—although they approach the job from different angles.

**Both parties**, as outlined in their farm planks, would encourage a more rapid exodus of acres if not of people out of farm production. Both would spend a good deal more federal money under various programs to get the job done. Whether the next Administration fulfills its campaign promises to the letter is beside the point. The point is that any new legislation will be along the lines of the platform pledges. The *direction* is more important than the details at this point.

**Strong government direction** is the general theme of the Democratic Party's platform and it includes agriculture. The Democrats emphasize production control from a strong central control center, the federal government. This means not only continuation of acre allotments, but the institution for the first time of production quotas on units of production—pounds, bushels and bales. This would not only control the amount of land used for a particular crop but control how much a farmer could produce from a given acre. This type of control would remove much of the incentive for pushing farmers toward seeking ever higher acre yields.

**Democrats would increase price supports** for farmers who are made subject to the stiff controls—to offset some of the income loss from reduced production. They have a hatful of gimmicks, such as production payments, to help make the adjustment more palatable and compliance more effective. Payments would be used to raise farm income but the proceeds probably would not be used by farmers to buy more fertilizer since much of the increased-production incentive would be wiped out by the pound-bushel-bale controls. Overall aim of the Democrats' farm plank is to do whatever is necessary to increase farm income

to a parity with nonfarm income—pretty much regardless of traditional patterns of doing farm business.

**A land retirement scheme** also is included in the Democratic plan. This would be aimed at helping low-income farmers to adjust out of agriculture. There is some belief that the Democrats' program—unit controls plus land retirement—would take the bloom off fertilizer and crop protection markets at least temporarily, although in some crops and areas it undoubtedly would increase demand.

**The Republicans**, for their part, take the almost directly opposite approach to the farm problem. Rather than going the route of strong federal direction and stringent production control, they are for *voluntary* production adjustment and income improvement. While their plank is considerably less dramatic than the Democrats' plank it may be every bit as significant to farm production. It is generally a more liberal approach to the freedom to farm than the one pushed by Secretary Benson these past seven years. One cannot say that it is a more embellished Benson plan because it stresses various things that Benson would never touch.

**Backbone of the Republican farm plank** is a greatly expanded Conservation Reserve—land retirement program. Major reliance to reducing surplus production would be put on the removal of land from active production, the retirement of a major farm production resource which eventually would be expected to retire other surplus production resources such as capital and manpower. Aim would be to retire between 35–40 million more acres in addition to 28 million already in the Conservation Reserve. These acres would come out of wheat, cotton and corn and other feed grains, primarily. Incentive to participate would come from a liberal payment-in-kind program. Farmers who reduce their active acres would be given stocks of government-held surpluses as payment. For example, a wheat farmer who retired wheat land into the program would get a certificate entitling him to a given amount of government wheat. He could either redeem the certificate in wheat or take it to a bank and get cash for it. Payment would be about half of what he would have grown if he kept his land in production.

**Emphasis on land retirement** would get at the farm surplus problem from two directions: From the standpoint of current surpluses it would reduce gov-



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41 plants of The A.A.C. Co., located in the United States, Cuba and Canada, assure you dependable, fast deliveries of AA quality products for farm and industry. You can schedule your production with confidence... the right quantity and grade will be at your plant when you need it.

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Bone Products • Fluosilicates • Ammonium Carbonate  
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Phosphorus and Compounds of Phosphorus



GENERAL OFFICE: 100 Church Street, New York 7, N.Y.



# What's Coming Next Month

"Why not let the Magic of Enthusiasm sell for you?" Has it ever occurred to you that this common sense type of selling can be profitable?

Enthusiasm is as contagious as the measles, and five times as much fun!

Do you suppose a potential customer would be interested in listening to a sales pitch from a salesman if he did not *show* the courage of his convictions? I cannot visualize anyone giving his time to a lackadaisical presentation.

O. C. "Junie" Merrett has in store for us an outstanding presentation next month. His "Salesense" series to date has already received accolades from the industry. This fifth article in the series is sure to be of the same caliber.

## ■ SELL A MENTAL CONCEPT

"You don't sell fertilizer!"

Imagine that!

A prospective buyer will pay untold sums of money for good ideas and not a penny for the product you sell. Ralph Everett says that what he buys is not your product but a *Mental Concept* of what your product can do for him.

Translate the product you manufacture into terms of human wants and desires and you make a sale.

## ■ CREDIT TRAINING

Credit training for dealers—the most important step of all in our credit series. Dealers are begging for assistance. Why not help them in a critical phase of their business operation.

## ■ AGRONOMY IN SALES

The need for agronomically-oriented dealers has yet to be recognized in many sectors. What better proof can there be than a success story of one who has put this approach to practice.

... in the new

**FARM** **BPA**  
**CHEMICALS**

## WASHINGTON VIEWPOINT

ernment holdings through payment-in-kind, and from the standpoint of future surpluses it would reduce the amount of land in production.

*Republicans down-rate price supports.* While they would continue them, they would be set at levels removing them as production incentives. They would develop marketing programs commodity-by-commodity.

**Summing up:** Regardless of which party gets to run the government in the next four years, or whether production reduction is voluntary or mandatory—industries selling the farm market have adjustments ahead of them. It may take another year or two before new programs are actually put into effect—so there's time for reflection on how they might affect your operation. One thing seems sure: Major changes are coming, only a question of time.

**August Congressional session** will not produce major farm legislation—unless there's an unlikely truce between the political parties to put into law an emergency wheat program. But even if a new wheat law is enacted—highly improbable—it can not go into effect until the 1962 crop since 1961 winter wheat planting will get underway this month. Also, farmers voted last month to continue the old program in effect for 1961 crop.

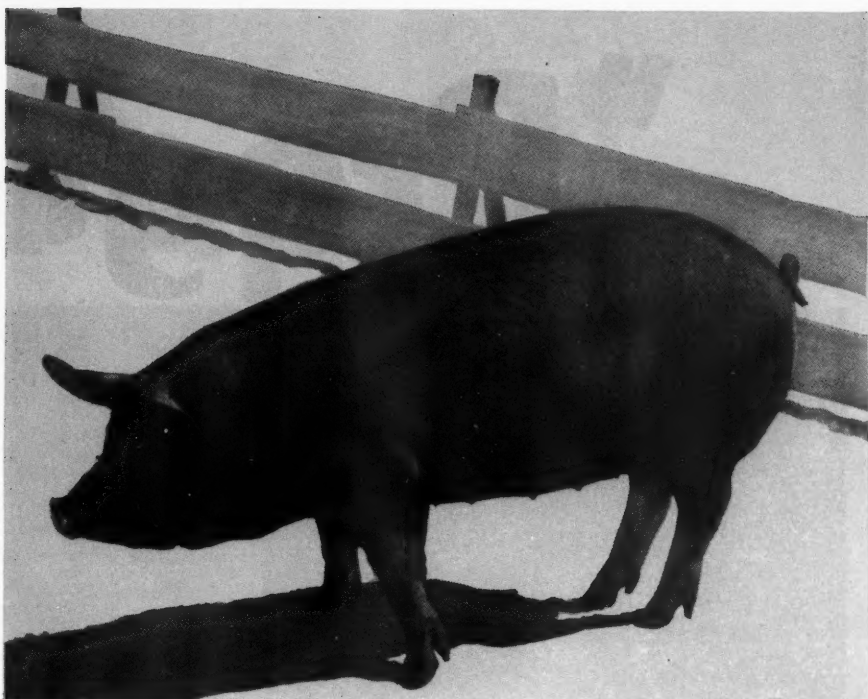
An "emergency" farm bill including an expanded land retirement program was expected to be introduced by Democratic Presidential Nominee John Kennedy in August. It is doubtful that even the most optimistic Democrat believes it will get anywhere with President Eisenhower in the White House wielding the veto. By the same token, the Democrats in Congress—ostensibly more unified now than ever—are not likely to give the Republican President the farm program he seeks. As far as agriculture is concerned, the August session is mainly a session designed to sharpen up the differences between party positions for this fall's elections.

**Crop production this year** will be another record, equalling the overall totals reached in 1958 and again in 1959. There is nothing now in the picture to indicate that 1961 farm production will be any smaller. Apparently, farm production has hit a plateau from which it could go on to greater glory.

**The question of carcinogens** used in food production now is to hang fire until the 1961 congressional session. No change in the Delaney amendment is expected during the August session of Congress. There is, however, an air of nervousness here in Washington about what might happen this fall as farm crops begin rolling to market. With the Food & Drug Administration conducting more intensive inspections of raw farm products, it increases the possibility that some illegal residues may be found. Question is whether Secretary Flemming would be more judicious in handling such a development than he was last fall.



# The Big Oink...



*At the beginning of 1959, there were 56,924,000 hogs and pigs on U.S. farms, worth \$31.90 per head. During the year, hogs yielded more than 12 billion pounds of pork, about 68 pounds per capita, consumed as roast, chops, ham, bacon, spareribs, hocks, the festive frankfurter and some sixty other kinds of sausages . . . grossing farmers \$3 billion.*

SUCCESSFUL FARMING farmers produce 60% of all hogs and pigs sold in the U.S., and raise as many as six to twelve crops a year, using a multiple farrowing system.

The growth, weight, and quality of hogs depend on farm-grown feed. To supply nutrition, SF farmers need and use more fertilizer, are major prospects and customers!

For more than a decade, SUCCESSFUL FARMING farm subscribers estimated annual cash income from farming alone has averaged around 70% above the average U.S. farm income.

With big farms averaging 336 acres, and high capital investment, SF farmers maintain soil fertility as a business asset.

SUCCESSFUL FARMING delivers for the fertilizer advertiser 1,300,000 circulation among the nation's best farmers in the National Edition, or circulations of 68,000 to 616,000 in the 24 State and Regional Editions.

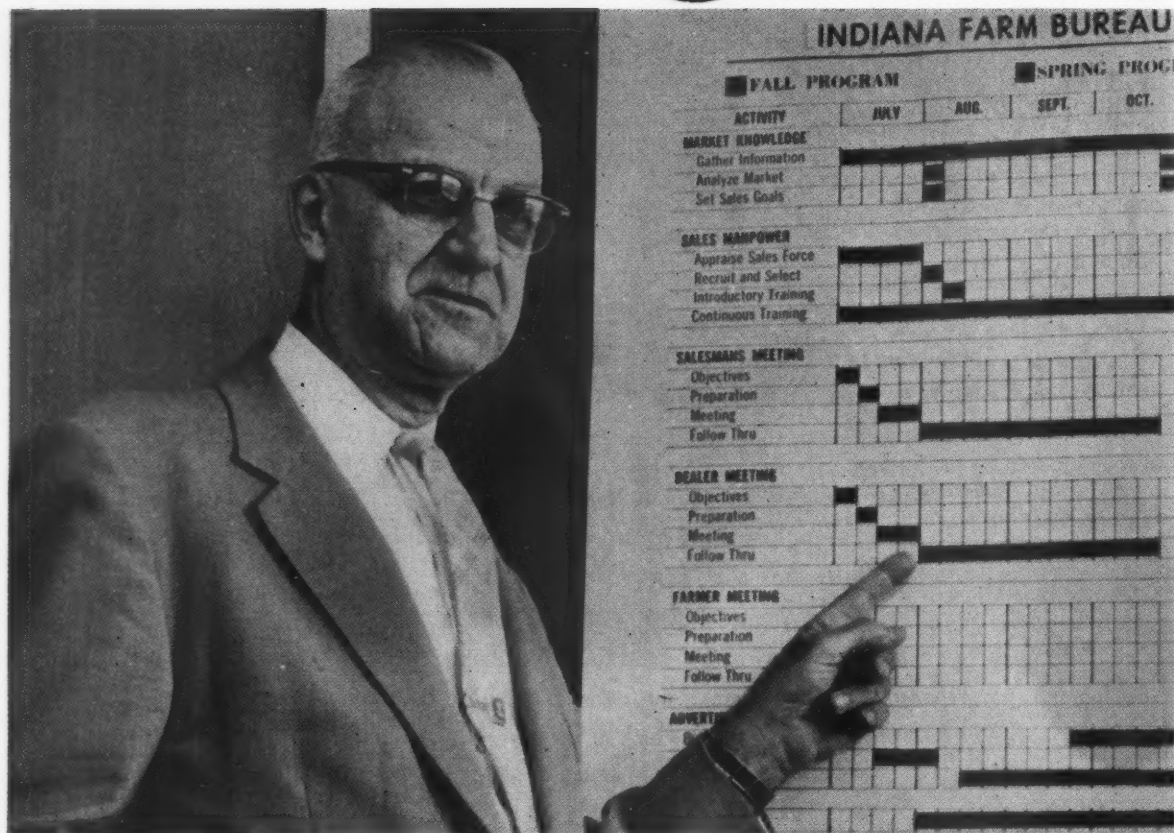
Your message in SUCCESSFUL FARMING gets the dual benefits of SF's influence and prestige, based on 58 years of service—supports your dealers in their territory, delivers maximum fertilizer sales.

The nearest SF office will gladly tell you more about your greatest selling opportunity.



MEREDITH PUBLISHING COMPANY, Des Moines . . . with offices in New York, Chicago, Atlanta, Boston, Cleveland, Detroit, Los Angeles, Minneapolis, Philadelphia, St. Louis, and San Francisco.

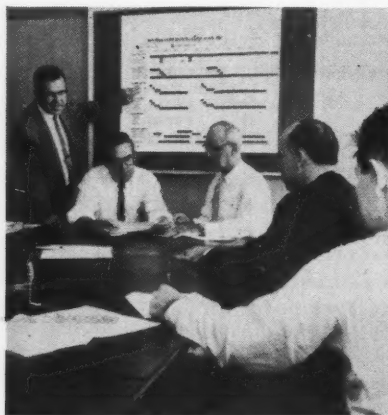
# "Progress



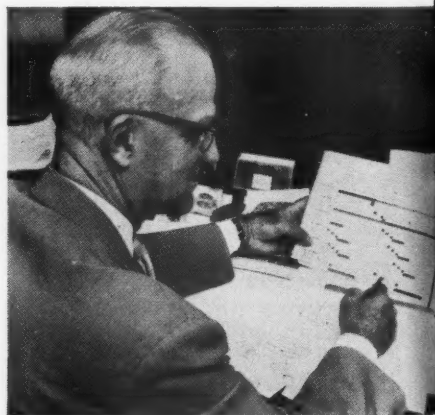
A. R. Mullin, fertilizer department manager, uses "Planalyzer" wall chart to coordinate everyone's work.



Mullin and Indiana Farm Bureau production manager Melvin Leach collect and interpret selling and marketing information . . . schedule additional conferences.



Well-organized sales meetings such as this were made possible through proper preparation and sufficient lead time.



Indiana Farm Bureau's fiscal year, efficiently organized and on paper, hustles projects through the works in an orderly fashion.

# on Paper"

*That's what many users call IMC's Planalyzer*

This marketing aid coordinates planning of sales activities for better business management . . . here's how one fertilizer marketing team used it to advantage.

The story began late in 1958 when the manager of the Indiana Farm Bureau fertilizer department, Mr. Arthur R. Mullin, and IMC representative Mr. George Urbanis discussed the fertilizer sales outlook for the coming year.

Urbanis introduced Mullin to a newly developed IMC marketing tool called the "Planalyzer" . . . a practical visual planning calendar specially tailored to fertilizer marketing.

#### **Mullin called a planning meeting**

with his production, field service and advertising managers. Using the "Planalyzer" forms they

blocked out sales seasons. Market research was scheduled. Next activities and promotion were planned to make the most of the selling season. Field sales meetings were scheduled. Purchasing, warehousing and manufacturing activities were geared to mesh with all other fertilizer department operations. Then after "Planalyzer" forms were completed, they were mailed to IMC for enlargement into a wall chart.

#### **"Best program we ever had!"**

At the end of the year Mullin stated, "We've always had a program, but this year it was on paper and organized. The "Planalyzer" helped coordinate everyone's work . . . encouraged planning and project scheduling. It also helped build a realistic sales goal. We had enough lead time so we didn't get into crash programs."

AGRICULTURAL CHEMICALS DIVISION

**INTERNATIONAL MINERALS & CHEMICAL CORPORATION**

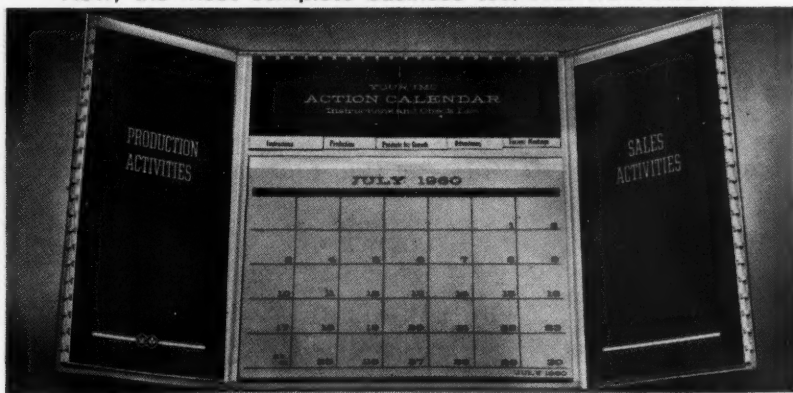
ADMINISTRATIVE CENTER: SKOKIE, ILLINOIS • 61 BROADWAY, NEW YORK 6 • MIDLAND, TEXAS



Now, the most complete business tool ever from IMC . . .



Indiana Farm Bureau's advertising manager, Eugene Holcombe, and his art director develop a solid campaign — in plenty of time — that helps spark successful selling.



**NEW IMC ACTION CALENDAR** — a bigger, more comprehensive marketing and production tool for the 1960-61 sales season. It distills successful experiences of dozens of fertilizer manufacturers into an effective, new IMC Full-Orbit Service. In addition to market research, advertising and other promotion, the ACTION CALENDAR blankets all fertilizer manufacturing and technical activities. Your IMC representative will call on you soon to introduce the new ACTION CALENDAR to you and your staff.

FO-1-01

# ORGANIZE your



*All of us can increase our selling time  
if we make an honest effort. This  
fourth article in FC's Salesense Series  
includes formulas that have worked for  
others . . . and will work for you, too.*

By O. C. MERRETT

*The time you spend planning and organizing is sometimes painful because you feel that it may all be a big gamble. The truth is that the biggest gamble lies in not being organized. Without organization, each call or interview must stand as a single effort. When this single effort fails (we can't sell them all), it's a pretty crushing blow. The law of averages then seems to be aimed against us. By putting a program of work ahead of you, the law of averages then becomes a strong friend and ally, and no single missed sale can throw you off the track.*

**S**ALES EXPERTS claim that confidence comes from two primary sources: First, the salesman's knowledge of his product, and second, from his being able to meet difficult selling situations with proper skill. To this should be added the calm certainty of success that good planning builds into a salesman's mental attitude.

Let's look at just a few reasons why we should organize our time.

It keeps us from becoming procrastinators.

Prevents us from becoming the most expensive errand boys in the state.

Keeps us from celebrating or letting down after the big sale.

Helps us systematize our selling efforts so we can boss our time.

Stops us from conducting funerals for lost sales.

Prevents us from entering into selling slumps.

Keeps competition from stepping on our toes.

Keeps us from becoming a high-priced *baby sitter* or chauffeur.

Helps us cash in on that white-hot feeling of confidence.

Helps us take charge of the day . . . Instead of letting the day take charge of us.

Eliminates confusion and gives us peace of mind.

Causes us to become time conscious.

Keeps us brief.

All of this means a saving of time and money . . . and when we save money, we make money . . . and that's what we want, isn't it? To make more money.



# r TIME

I watched one of our top sales instructors teach a session one evening. After the session was over, three-fourths of the class went to the front and shook hands with this instructor, thanking him for the help he had given them. Here, in part, is how this instructor handled the session:

"Fellows, last year each of you made several thousand dollars. I wonder if any of you still have the money you earned last year. I can see by the way you are shaking your heads that you don't. I don't have the money I earned last year, either. None of us are expected to have the money we earned a year ago. That is not the important question. The question is, 'What happened to the money?' Was it spent, or was it wasted? If you spent your money wisely, you have something to show for it. If you wasted it, you have nothing to show.

"The same thing is true of your selling time. If you work a 10-hour day, you have 600 minutes to either spend or waste.

"Let's assume that you are earning \$150.00 per week and are working five days. This means that you earn \$30.00 per day, and if it's a 10-hour day, your earnings are \$3.00 per hour. If we divide this by 60, we see that you are earning \$.05 per minute. *At this time, the sales instructor took a nickel out of his pocket and held it up . . . then he walked to the window and threw the nickel out and said, 'I wonder how many of you can afford to do that many times a day?'* Not many of us can, I am sure. And yet that is what we are doing every time we waste a minute of our time."

Let's look at some of the ways in which we waste time, some of the ways we spend our time, and some of the ways we invest our time.

**CAUSES OF WASTED TIME**—(Time which does not help make sales, either now or in the future):

Talking to customers who can't buy	Work not organized
Improper routing	Talking too long
Late start	Talking about the wrong product
Quitting early	Horseplay
Working too slowly	Stopping work to talk

Idle talk  
Breakdowns  
Loading too little merchandise  
Making errors  
Traffic delays  
Poor planning

Coffee breaks with the wrong people  
Waiting for a customer or his employee  
Equipment not properly checked  
Lunching alone

**SPENT TIME**—(Time used in serving my customers and preparing to increase sale):

Driving	Pricing merchandise
Loading	Picking up old merchandise
Checking demonstrator	Picking up damaged merchandise
Checking sales kit	Checking in
Eating lunch	
Filling out sales slip	

**INVESTED TIME**—(Time used in planning, direct selling, or in extra service to create a more favorable selling situation):

- Planning my day's work
- Planning each call
- Making sales presentations
- Greeting the customer and his employees
- Conversing with the customer and his employees to create a friendly relationship
- Selling to consumers
- Putting up point of sale material
- Putting up special displays
- Checking on my competitor
- Studying and preparing to become a better salesman
- Doing favors for the customer, such as:
  - a) Making a bank deposit
  - b) Giving directions to consumers
  - c) Keeping him informed
  - d) Answering his telephone

One of the best ways I know to find out where your time goes . . . and also find out just how much time you spend each day face to face with your prospects . . . is to ask yourself the following questions, and write the answers down on paper:

- ▶ How much time do you spend in bed each night, including the time you spend undressing and dressing?
- ▶ How much time do you spend on recreation each day . . . television, bowling, golf, theater, radio, reading, and other forms of recreation?
- ▶ How much time do you spend, on an average, eating three meals (including snacks), plus the time spent cleaning up for these meals and waiting to be served?
- ▶ How much time do you spend going from prospect to prospect? (Figure this on a daily average.)
- ▶ How much time do you spend drinking soda, coffee, beer or anything else?
- ▶ Now, how much time do you spend on preparing samples, changing prices, bringing your catalog up-to-date, writing letters, making phone calls, making reports, attending sales meetings?

Now, if you will total this up and subtract it from 24, you will find out just how much time you are

## MARKETING

### ORGANIZE your TIME

(Continued)

spending face to face each day with your prospect. Here is about how it works:

1) Time spent in bed.....	8½ Hours
2) Time spent on recreation.....	3 Hours
3) Time spent eating.....	3 Hours
4) Time spent going from prospect to prospect.....	2½ Hours
5) Coffee Breaks.....	1 Hour
6) Time spent working on job doing anything other than selling.....	3 Hours
<b>24 Hours</b>	<b>21 Hours</b>
<b>—21 Hours</b>	
<b>3 Hours</b>	

If you have 3 hours face to face with your prospects, don't let it worry you . . . you are among the average. We started using this test some 3,375 salesmen back and found that 90% of the 3,375 salesmen's cards showed from 2½ to 3 hours. And unless you have either trained yourself in the management of time, or have taken a course in time management, your figures will not show more than 5 hours . . . if they do, check them for mistakes!

Here are four solutions for budgeting your time:

- 1) Put a price on your time
- 2) Set yourself a goal
- 3) Rearrange your itinerary
- 4) Use the Charles Schwab formula

#### PUT A PRICE ON YOUR TIME

*Every second, minute or hour you add to your selling time increases your income.*

Selling time is the time you spend face to face with your prospect or customer. So, if you put a price of \$10.00 an hour on your selling time and you increase your selling time or "face to face" time one hour a day, you have increased your income \$10.00 a day, and if you work five days a week, you have increased your income \$50.00 a week. Now, if you work four weeks a month, you have increased your monthly income \$200.00 . . . and if you are like most of us, you can use a \$200.00 a month increase!

*Remember . . . all of us can increase our selling time if we make an honest effort.*

You can't plan where to go unless you know where you are. And you don't really know where you are unless you're sure of exactly where you've been.

Last year, how many: *Calls? Interviews? Sales? Total earnings last year?*

What was the average: *\$ size of the sale? Commission on each sale?*

Now we can determine the dollar value of each call, each interview, each sale. If our ratio of interviews divided by calls is too low, we know we need to improve methods of getting appointments.

If our ratio of sales divided by interviews is too low, we need better selling skills and better planned sales presentations.

If a man made 1,000 calls last year and earned

\$10,000, he knows that every time he goes to see a prospect (whether or not he gets to talk to him) he is putting \$10.00 in his own pocket.

With this knowledge, a man can really plan for next year, because *he* knows where he's been and where he stands now.

If your earnings last year were \$10,000, and if you spent an average of two hours a day in a selling situation with a prospect, then, based on 200 working days a year, your selling time is worth \$25.00 per hour.

Anything you do with your time that doesn't pay you \$25.00 an hour, should be cut down, eliminated, or performed by someone else.

Another fine way to get at your time problem is to analyze your problem . . . Try this four-step formula:

- 1) What is the problem?
- 2) What are the causes?
- 3) What are the possible solutions?
- 4) What is the best solution?

*Example:*

- 1) Problem—Not getting in enough interviews with farmers
- 2) Causes
  - a. Calling on too many farmers who are out
  - b. Not making enough calls on farmers
  - c. Getting started too late
  - d. Quitting too early
  - e. Spending too much time with customers
  - f. Taking too many coffee breaks
  - g. Not using call chart
  - h. Not organized.
- 3) Solutions
  - a. Be sure farmer is in by phoning before going if possible
  - b. Get up one hour earlier
  - c. Make one more call after quitting time
  - d. Cut your time with sold customers
  - e. Cut out coffee breaks
  - f. Use a call chart
  - g. Set up an organized plan
- 4) Best solution
  - a. Get organized!

So if the solution to your problem of not getting in enough interviews is not being organized, wouldn't it be wise to take time to organize?

#### THE CHARLES SCHWAB FORMULA

It has been written and said many times that Charles Schwab, deceased president of Bethlehem Steel Company, paid \$25,000 for the secret of managing time.

*The secret that he paid \$25,000 for was . . .*

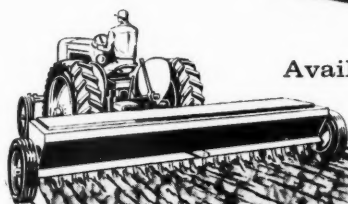
Write down the six most important tasks you have to do tomorrow and number them in order of their importance. Now, put this in your pocket and the first thing tomorrow morning, look at Item One and *start working on it until it is finished.* Then tackle Item Two in the same way; then Three, Four, Five and Six. Do this until quitting time. Don't be concerned if you have finished only one or two. You've been working on the most important ones; the others can wait. If you can't finish them all by this

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### ORGANIZE your TIME

(Continued)

method, you couldn't have by another method, either; and without some system, you would probably not even have decided which was the most important.

Do this every working day. After you've convinced yourself of the value of this system, have your men try it.

Charles Schwab said this plan had a lot to do with turning the unknown Bethlehem Steel Company into the biggest independent steel producer in the world. This plan helped Charles Schwab become the best-known steel man in the world and a million dollar salaried man.

If it worked for Charles Schwab, it can work for you. You can do only one thing at a time, so do it; then start on the next one. But if we try to do them all at the same time, we get frustrated, confused . . . and none of them will be done right.

#### SET YOURSELF A GOAL

If you do not have a selling goal, how do you know where you are going? There is a difference between wanting to go to the seashore and laying plans to make the trip. The salesman who daydreams of making more sales will still be wishing long after the young salesman with an organized plan passes him by.

The man who makes a step-by-step plan for more sales will be making more sales while the other man is still wishing. Wishing makes it so, when accompanied by planning.

You might want to try the following steps for setting your selling goal:

- 1) How many more sales do you want within the next year?
- 2) Write the number down on a 3 x 5" card, fold the card and put it in your change pocket, so that every time you reach for change you feel the card. This will remind you of your goal.
- 3) Tell your close friends what your goal is. They will ask you how you are getting along with it as you visit with them. This will be a challenge to you to keep going.
- 4) Map out your goal . . . chart it out. How are you going to get there? How many sales next week over this week? How many next month over this month? It's not enough to sit down and tell your sales manager, "I'm going to make 230 more sales next year." This is good thinking, but it's too indefinite . . . seems too far away, and can be discouraging. You will find it a lot better to say, "I am going to increase my sales by 230 next year, and here is how I intend to do it . . ." Then give him your plan.
- 5) After you have your goal, and your plan worked out for reaching it, *put it in action immediately*.
- 6) If you should miss or fall short of your selling goal, don't let it discourage you. *Start over immediately*.
- 7) Don't settle for one sale less than your goal . . . stay with it until you get it. I think it was Jim

Corbett who said, "If you want to win, fight another round." So if you want another sale, make another call.

Another time saver is to work by a time card . . . this card will keep you from stopping. It's a challenge to you to keep moving.

#### ASK YOURSELF THESE QUESTIONS

When you start to organize your day's work for tomorrow, ask yourself these questions:

- 1) What time will I get up?
- 2) How long will it take to shower, shave, dress, breakfast, brush teeth?
- 3) How long will I read paper—listen to news?
- 4) When will I leave home?
- 5) How long will it take to get to the office?
- 6) How long will I spend at the office?
- 7) What will I do at the office?
- 8) What time will I be face to face with my first prospect?
- 9) Is my appointment sheet filled?
- 10) When will I use telephone?
- 11) How long will I use telephone?
- 12) Do I have a substitute in mind in case of a cancelled appointment?
- 13) Are my appointments planned close together?
- 14) Am I squeezing in that one more call before lunch?
- 15) Am I going to stop for coffee? If so, how long?
- 16) What time will I stop for lunch?
- 17) Am I eating alone? If so, why?
- 18) How much time will I spend eating lunch?
- 19) What time will I face my first after-lunch appointment?
- 20) Will I stop in the afternoon for refreshments or coffee?
- 21) What time will I make my last call?
- 22) Could I make just one more call?
- 23) Do I have any evening calls planned? If not, how will I spend the evening?
- 24) When will I analyze today's calls; if I closed, why? If not, why not?
- 25) When will I plan tomorrow?
- 26) When will I read and study up on my product?
- 27) When will I organize my portfolio—my demonstration?
- 28) When will I research my prospect?
- 29) When will I go to bed?
- 30) When will I study my advertising?

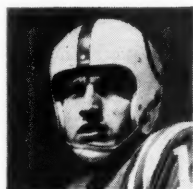
Listed in this article are *not* just some rules to try . . . these formulas are not on trial. They have been tried, tested and proved. They have worked for others . . . they will work for you.

So if you want to stay out of sales slumps, stay ahead of competition, avoid becoming frustrated, confused . . . if you want more self-confidence, peace of mind, to make more calls, get in more interviews, close more sales . . . start using one or all of the above plans.

I think David Star Jordan, former president of Stanford University, summed this entire article up when he said, "The world steps aside to let the man pass who acts as if he knows where he is going." If you are organized, *you know*. If you are not, *you don't*. ▲



## EXPANDA-KRAFT (newest, high-strength H&W bag stock) stops a Johnny Unitas pass



Johnny Unitas, all-pro quarterback, throws fast and hard and straight. We asked Johnny to help us demonstrate the strength and resilience of Expanda-Kraft. He had two targets; regular multiwall kraft and Expanda-Kraft.

Each target had four plies of 50-lb. stock. The speeding pigskin ripped through regular kraft, but time after time it bounced off Expanda-Kraft. The picture shows where the ball left dents in the Expanda-Kraft.

### Multiwall bags made of Expanda-Kraft:

**Reduce breakage**—Expanda-Kraft bags have two-way stretch, soak up shocks that would break ordinary kraft bags of equal basis weight.

**Stack securely**—They stack with less risk of slippage and stay in place while in transit, because of improved friction coefficient when compared with regular kraft bags.

**Withstand moisture**—Weathering and high humidity have little effect. They stay tough. Firm.

**Print sharp**—Their attractiveness increases your product's sales appeal. Expanda-Kraft White is unusually bright and takes fine printing beautifully. Semi-bleached and Natural shades do, too.

**Fill fast**—Expanda-Kraft bags have high porosity. And they're rigid enough to stand up to high production speeds on the filling line.

Expanda-Kraft, made by a new roll-crepe process, withstood the terrific impact of these Johnny Unitas bullet passes. It combines rigidity and moisture resistance with uniform toughness. Expanda-Kraft is available to multiwall bag manufacturers in 40, 50, 60, 70 and 80-lb. basis weights. Expanda-Kraft bags have proved their superiority over regular kraft bags in standard drop tests.

**Expanda-Kraft is superior to regular kraft in impact test.** These bags were filled with sand, suspended on long ropes, released and collided in mid-air. Only the regular kraft bag burst, yet it had the same ply construction as the Expanda-Kraft bag.



Contact your multiwall bag supplier for more information. Or, write *Hollingsworth & Whitney, Division of Scott Paper Company, Chester, Pennsylvania.*

SAFEGUARD YOUR PRODUCT IN EXPANDA-KRAFT\*

\*T.M. Scott Paper Company

**HOLLINGSWORTH & WHITNEY** DIVISION OF  
 **SCOTT PAPER COMPANY**

# SELL A MENTAL CONCEPT



By RALPH EVERETT

*Let's discuss a man you know well. Let's call him Mr. Consumer Buyer.*

*He dragged himself out of bed one morning sporting a man sized hangover, achieved by drinking vodka "which leaves you breathless," secure in the belief that "relief is just a swallow away." He lights a cigarette designed "for men that women like" and heads for the shower.*

*He uses a soap that "makes him kissing fresh" . . . shaves with a razor that makes him "look sharp, feel sharp and be sharp," dons clothes that make him "look like the man he'd like to be" and he's ready for a cereal that's "shot from guns," for which his son, incidentally, received a Boom Boom Boomerang and a genuine Mau Mau shrunken head.*

*Across the table is his devoted wife who dreamed last night that "she played in an all girl orchestra" in her Maidenform bra. This morning she's even more convinced that "it's what's up front" that counts. She gives hubby a "kissing sweet" farewell and he's off to the office confident that he will be envied in his "symbol of excellence" riding on tires that are "turnpike proved."*

*So far Mr. Consumer Buyer has been the beneficiary or victim of his own, his wife's, or his child's conscious or unconscious susceptibility to advertising and selling . . . consumer style. He has permitted himself to be led, cajoled, even pushed into purchases he did not want, could or could not afford. He has bought on impulse . . . emotionally . . . virtually involuntarily. He was spending his money to make himself feel better, more desirable, more important, safer.*

**I**S MR. AMERICAN FARMER susceptible to the same emotional factors which appeal to Mr. Consumer Buyer? Does some strange metamorphosis take place when we start to sell to Mr. American Farmer or are we the victims of our own apathy? Have we fallen so far behind in our thinking that we will allow farm machinery manufacturers and others to successfully compete for the farmer's dollar to the exclusion of our fertilizers which can be proven scientifically to make a farmer more money than any other item he can purchase for his farm?

The modern American Farmer is running a food factory. He uses the fertilizer you sell as a conversion item to produce more meat, milk, eggs or cash crops. He doesn't purchase fertilizer, or feed or seed to place on the mantel piece as an object to admire. It is important to remember when selling the American Farmer that he uses fertilizer as a conversion product to produce the end product which he markets.

What is good for the farmer is good for the dealer and what is right for both the dealer and the farmer will ultimately be good for you as fertilizer manufacturers. We have no right or justification to try to sell the farmer anything that doesn't improve his way of life. He has thousands of dollars invested in his business and most of them have come to realize they are running a food factory and they must operate as businessmen. The ones who haven't recognized this fact or refuse to recognize it won't be with us very long.

Everything we do, everything we say, every act we commit must be designed toward making a better life for him. What other principle can we operate on?

## "OUR BUSINESS IS DIFFERENT"

Did you ever notice how some of us like to doom ourselves to failure because we resist change or don't know how to cope with change? Someone develops a well thought out sales promotion plan beamed at bringing the farmer a better way of life. Manufacturers, dealers and salesmen say, "Well, I suppose we ought to go along with the idea but it won't work in our trade area. Our business is different." Ever hear that before?

You are dead right! It won't work . . . you have said it and from that moment on you subconsciously have to prove you are right . . . it had to fail.

We must keep an open mind. When a new idea is presented, don't reject it just because you have never tried it.

Probably no industry has prepared its salesmen with more technical knowledge than has the fertilizer industry. Fertilizer salesmen are more thoroughly grounded in the chemical composition of their product and the technical aspects of their business than any other sales force in history. Probably no industry has spent so much time indoctrinating their salesmen in the technicalities of their product than has the fertilizer industry. Technical experts working for fertilizer manufacturers have done their job well.

*On the other hand, no industry has so thoroughly neglected the human element of selling.*

No group of sales people has been more completely neglected in what makes the human mind say "yes,

*Presented at the National Plant Food Institute Annual Meeting, June 12-15 in White Sulphur Springs, W. Va.*

FARM CHEMICALS



I'll buy" or "no, I won't buy" than the fertilizer salesmen and dealers of America.

All too frequently, the sales presentations which I have heard fertilizer dealers and salesmen present have been so full of technical "nuts and bolts" that barriers of confusion and indecision have obscured the mental pathway to comprehension and motivation in the prospect's mind. Nearly always these barriers have been placed there unintentionally because of improper understanding of how a sale is actually made.

I am not saying that salesmen and dealers should not know their product. This is the first step in learning how to sell anything. Unfortunately, however, 95% or more of the sales effort has been on the technical features of the product and 5% or less on the human element of making a sale.

The Farmers of America are anxiously waiting, yes longing, for the plant food salesmen who can find out the things he wants most in life and help him achieve his life's ambitions and goals. The large majority of farmers do not comprehend, nor much less care, as was pointed out by Drs. Bohlen and Beal, how much choline, cocaine or other hopped up malts are in your fertilizer. He knows that if you are a reputable manufacturer, you will have all the necessary technical ingredients to do a good job for him.

#### PICTURE HIS PROBLEMS, GOALS

The farmer is longing for the fertilizer salesman who can picture his problems, his investments, his ambitions, his goals in life. He is longing and anxiously waiting for that fertilizer salesman who can help guide him toward those goals. The fertilizer salesman who will trouble himself to learn the processes that go on in the farmer's mind will have a gold mine that will produce in direct proportion to the work he wants to put in.

*It can be proven that Mr. American Farmer is subject to the same emotional buying factors which motivate Mr. Consumer Buyer. It can be shown that all too many fertilizer manufacturers have been relying on educational institutions and extension agencies to sell the idea of proper fertilization.*

It may be said that too many fertilizer manufacturers are not selling as much as they'd like to sell because they are trying to skip part of the fundamentals of making a sale.

I'm not asking you to go far beyond the scope and comprehension of the farmer. But I do want to ask you as salesmen, "To whom are you selling your soil fertility plans?" You are selling to farmers, and in order to sell farmers you have to be able to think like a farmer . . . know what a farmer thinks and what he's like. This will be an embarrassing question but, "Have you actually tried selling farmers within the last five years?"

Why don't we think like the farmer thinks? Well, we've all too frequently got our eye and our mind on the "Close" and the order.

We miss the goal more often than not because we don't follow the rules. We don't take time to learn the simple basic steps of making a sale and apply our sales procedures to these steps.

In building a house there are certain fundamental procedures to follow. You don't start with the rafters; you start with a foundation. Likewise, certain thought processes take place in the prospective buyer's mind

whether it is Mr. Consumer Buyer or Mr. American Farmer in this order:

1) Curiosity, 2) Interest, 3) Conviction, 4) Desire, 5) Action.

I'd like to discuss two of these five basic steps with you and outline how I believe you can make use of these to improve your sales. I'd like to discuss the difference between the two words "conviction" and "desire."

The dictionary defines the word "convince" as the act of persuading by argument or proof. The word "desire" is described as to wish for, to want strongly. In respect to making a sale, these two actions, conviction and desire, frequently take place in the prospective buyer's mind almost simultaneously. Like a well matched team of horses, they pull neck and neck . . . with one distinct difference. Conviction must come first.

The buyer must believe your goods are as good as you say they are. He must believe that your goods will do for him exactly what you say they will do. And how does he become convinced? By logic, simple basic logic, backed up by words and deeds of people he believes in, men like George Beal and Joe Bohlen, who represent an unbiased opinion and whose scientific facts cannot be disputed. He believes in his neighbor whom he respects. He believes in his extension agent who has no axe to grind. Men are convinced that they should think as you think when you present to them definite and logical reasons and evidence. Conviction alone, however, isn't enough to stir a man's soul . . . to motivate a man to an action he otherwise wouldn't have thought of taking . . . to buy a soil fertility plan which only yesterday he hadn't considered.

#### THE HUMAN HALF OF SELLING

This is where the other half of a sale comes into play. This is where the human half of selling is so all important. This is where DESIRE to want strongly . . . the emotional part of selling manifests itself . . . by you . . . your salesmen and dealers . . . nobody else!

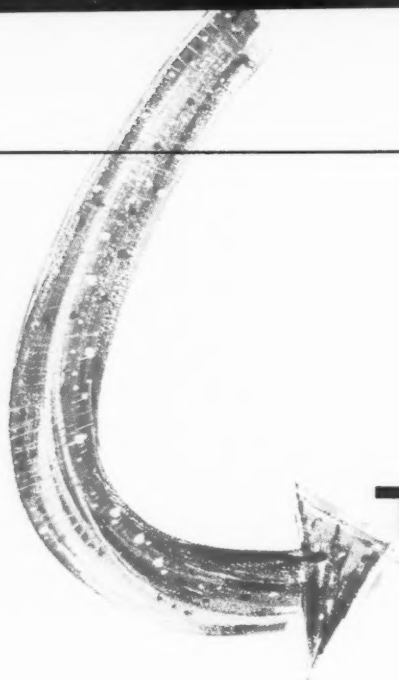
You can memorize all the books in the sales library and not be a salesman if you lack the one essential ingredient . . . *DO YOU REALLY CARE?* Do you really care enough to take the trouble to create desire for your soil fertility plan? Do you really care enough about Mr. American Farmer to go to the trouble to develop a soil fertility plan which will create desire?

What is the secret of great "salesmen" like Billy Graham, Bishop Fulton Sheen and other inspiring leaders? It's very simple. In fact, it's no secret at all. It's the meat of all selling. Sure they know their product but they know how to relate the *benefits* of what they sell to every person they meet. They know how to create desire. They know what their prospects WANT and they can picture them enjoying what they will presently buy.

The leaders of the fertilizer industry during the next ten years will have demonstrated and proven one simple truth: *You don't sell fertilizer you sell a mental concept of how the farmer can benefit from your soil fertility plan.* ▲

*Next month, Everett will show what is needed to fulfill the elements of a Soil Fertility Plan—to sell in terms of a farmer's career.*





## The

By F. E. HARTZLER

*Thus far we have tried to show two problems: first, that the fertilizer industry, because of its seasonal nature, will require large amounts of credit for a short period of time; second, that no pattern has been developed which would permit the use of credit by large financial organizations. This is quite different from other industries where such patterns have been developed.*

**N**OW THERE REMAINS one more point for study. Can the fertilizer industry develop to its full potential without the use of agricultural credit? I believe that the answer is obvious. The first farm tractors were developed on a large scale as a result of World War I. By 1939 the farm equipment market had been saturated. Television came along late in 1949 or early 1950 and, in less than seven years, saturated its market. The automobile, of course, took somewhat similar turns.

There is in each of these instances a good reason for this growth. The product was made available to the middle market, usually by a well-organized credit program. Certainly, these industries would be the first to admit that without some sort of organized credit their sales would probably be only a tenth of what they are today.

### MARKET SATURATION: 10%

A survey by the National Plant Food Institute shows that the market saturation in fertilizer has reached ten per cent. Yet every manufacturer is working hard to undercut everyone else on this ten per cent. There is no organized credit program in the industry and until one is started, the industry will probably remain small. The middle market must be reached and the tool is credit.

Now it is not possible to begin a crash program in the issuance of credit on the part of dealers. They do not have the experience to screen customers satisfactorily; they do not have the finances available to carry this kind of credit; and they do not have a good enough arrangement with the supplier. There cannot be and should not be any loose or careless extensions,

but there should be some tentative starts made in evolving a pattern.

However, any credit pattern must take two things into account. Fertilizer is hard to repossess once it is in the ground, and farmers aren't used to credit instruments other than mortgages against their real estate.

The first thing that the dealer should do is to secure a list of farmers in his territory. Then these people should be qualified, either by screening through the retail credit bureau or through the bank. Those who can pay cash should be noted also. Now, probably, the number who can pay cash will amount to ten or fifteen per cent of the entire list. The number whom the bank will finance, depending upon the territory, will be another twenty per cent. This should leave about sixty per cent of the farmers and probably fifty per cent of the total acreage to be covered.

This is the per cent that industry is currently missing. Of this sixty per cent almost thirty per cent will prove to have good retail credit ratings and it should be possible to take these names to a finance company and secure financing for them. This group will buy at full price in all probability. They will need credit and there is no reason why they should not have it. It is quite possible that the supplier himself may want to carry some of this credit, since it could probably be carried at the rate of one and one-half per cent a month.

This leaves another thirty per cent. This is the most risky part, on the surface, but it is also the same part of the market that has made finance companies powerful institutions. This part will have a certain number of dead-beats—expect them. On the other hand, this is the part of the market that will pay the highest rate of interest on money loaned. They will argue less about price, and frequently from this group, which includes a few gamblers, will come many of the future leaders.

If credit is to be issued to this last part of the market, it will become necessary for us to find some method of control. Fortunately it is not necessary for us to invent the forms, but it will be necessary for the industry to develop some standards for the measurement of safe limits.

*Market saturation in fertilizer has reached 10 per cent, according to an NPFI survey. And every manufacturer is working hard to undercut everyone else on this 10 per cent. But with organized credit as a tool, industry could reach*

## MIDDLE Market

The first and most useful form for the dealer or the credit manager of a supplier is the credit aging form. This is not new in any respect but does provide very useful information. It should be set up like this:

**CREDIT AGING FORM**

Name	30 Days	60 Days	90 Days	Six Months
John Smith	\$ 100		\$50	
John Brown	\$ 500			
John Public		\$200		\$100
John Private	\$ 700			
	\$1300	\$200	\$50	\$100

This form will quickly tell both the dealer and supplier the condition of the credit each month. The important thing about the use of this form is that it provides a chance to gather information.

For example, it is quite possible that there are months of the year in which a large amount of credit over sixty days old is not dangerous; yet there may be other months when there should not be any credit out over sixty days unless it is secured by some sort of agreement. What is needed by the credit manager is a guide—something to go by. Here past records of one company and then the cumulative records of many companies would be of great help.

Then there is another thing that can help sales. There are credit managers who have never lost a cent. It is questionable just how good a credit manager this man is. For instance, I heard of a tax attorney who had never lost a case or even been questioned by the Internal Revenue Department. He was costing his clients a lot of money by being too safe. He should have had some items questioned and even lost a couple. The same is true of credit management. You may be losing sales if you aren't taking enough risks. However, before you can take the risks you must have the

figures to give you a break-even point. This will obviously require some past records and a gathering of past experience.

If you are going to run a few risks in credit, these should be pattern risks so that you can measure them. This cannot be done if you are afraid of the customers, and being afraid of the customers seems to be chronic in farm chemicals. The rich farmer beats you down on price, and you need sales so badly that the poor ones are inadequately screened.

The first step in screening should be a credit application, but the usual credit application used for consumer credit is inadequate. A farm has some elements of a business, and should be treated like one. So let's examine the fundamental process of credit. We need to know two things: the past record of the farmer in paying his debts, and his present capacity to pay.

The bank and the Retail Credit Bureau can probably supply us with past records. The standard credit application can serve nicely, if we add another sheet to obtain the following information:

- 1) Farm diagram and crop plan for the coming year.
- 2) Livestock.
- 3) Crops and yield from this land for the last three years.
- 4) Results of soil tests.
- 5) Machinery and equipment (age and condition).

This last sheet may contain part of the key to farm credit. It should tell the ability of the farmer to farm and also whether or not he is raising crops that he cannot possibly come out on. For example, it was interesting to watch the University of Minnesota's figures which showed the size and types of farms that couldn't succeed.

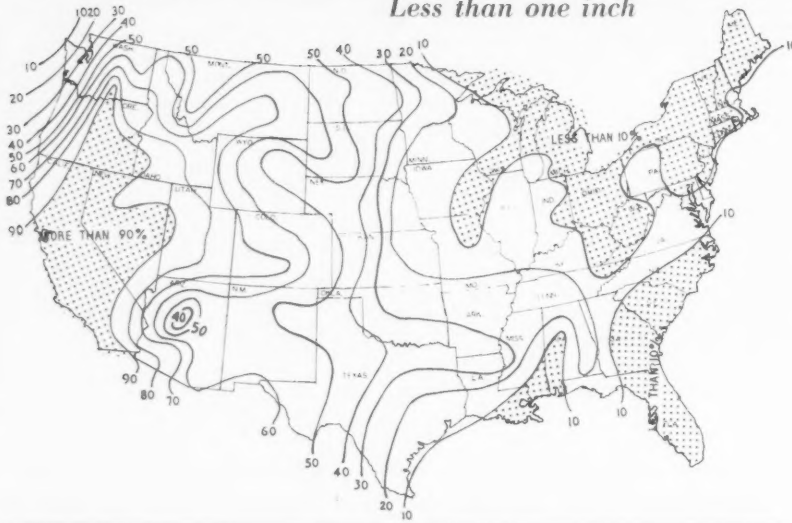
In addition to increased sales, good credit management in the farm chemicals industry might do more for farm planning than anything else has done in years.

*Next month Hartzler emphasizes the most important phase in establishing credit in the fertilizer industry: the need for thoroughly training the dealer in credit.*

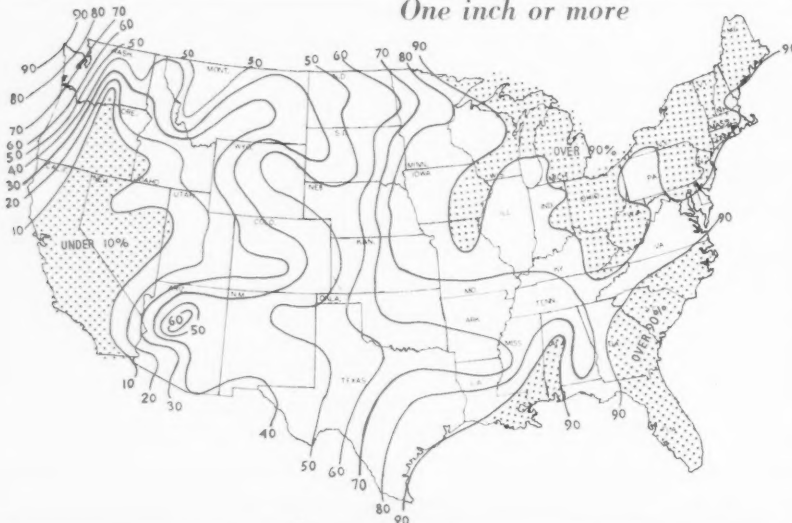
# september RAINFALL

% Probability

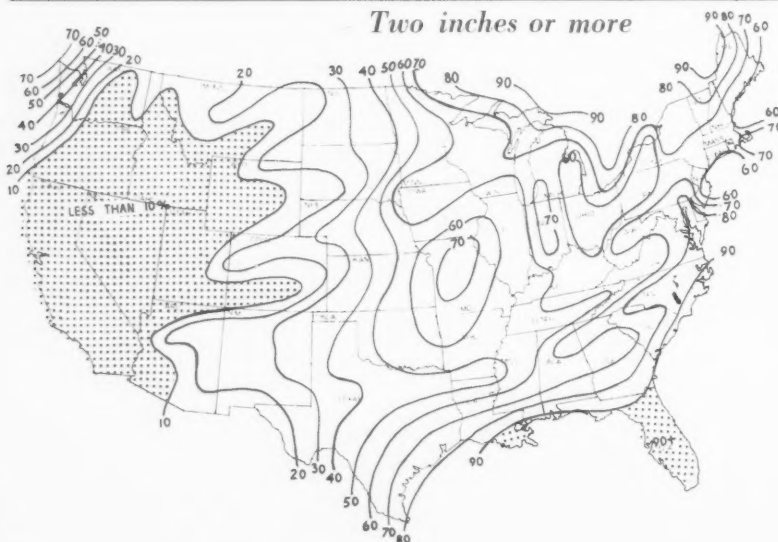
Less than one inch



One inch or more



Two inches or more



***FC continues  
its exclusive  
weather  
service for  
the industry***

By VAUGHN HAVENS

**T**HESE maps show the chances of receiving various amounts of rainfall in September. The lines connect points of equal rainfall probability which can be readily converted into the odds in favor of or against receiving the indicated monthly rainfall total. For example, 70% probability represents the likelihood of occurrence of that amount of rainfall or more 70 times out of 100, or 7 times out of 10. Or putting it another way, the chances of receiving a September rainfall total less than the indicated amount are 3 in 10, or a 30% probability.

This information is not a weather forecast in the usual sense. Although forecasts for a month or more are often attempted, their accuracy at present is quite limited. If an attempt is made to use such a forecast for planning purposes it may be more harmful than helpful, since the user has no indication of the confidence which he can place in the forecast, and thus no way of judging the risk of a planning error due to an erroneous forecast.

## HOW TO USE THE MAPS

The following examples will help to show how these maps can be used to provide a quantitative estimate of rainfall risks in September. Suppose your plans for September would be adversely effected if the month brought less than 1 inch of rain to your area. In this case, if

FARM CHEMICALS

you were concerned about central Florida, the odds would be better than 9 to 1 against a monthly rainfall total of less than 1 inch, and your plans would run little risk of failure due to lack of moisture. Now suppose you are making plans for the Ohio valley area which would only be hampered if September happened to be very wet—say 5 inches or more. A glance at the five inches or more map on the lower right shows that most of the Ohio valley lies within the 10% line, indicating a risk of less than 10%.

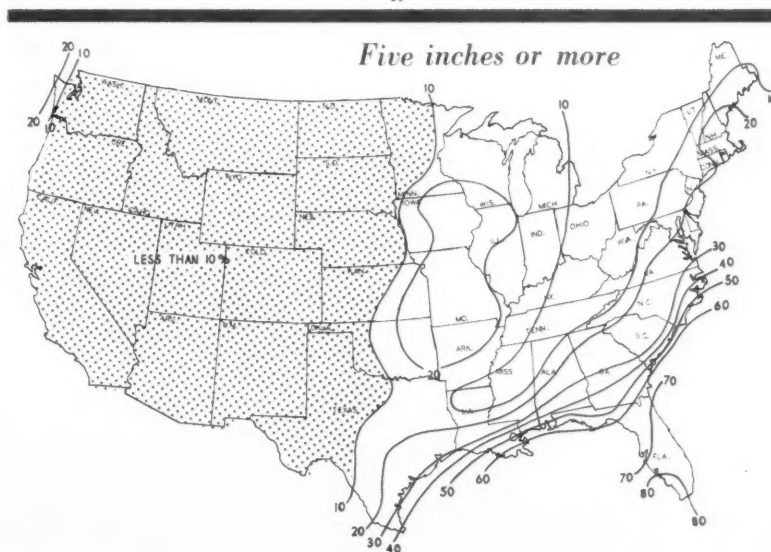
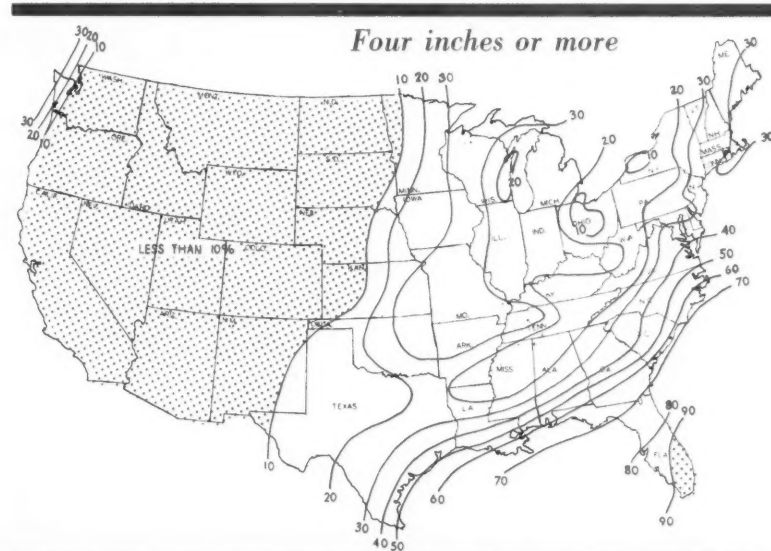
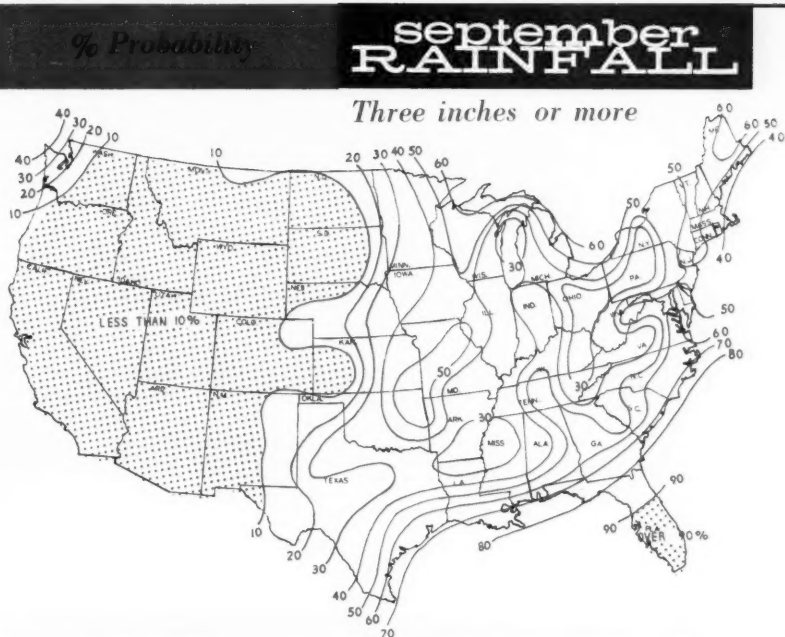
#### HOW THEY WERE PREPARED

Thirty years of September rainfall records for more than 200 U.S. Weather Bureau stations were used in the preparation of these maps. Thus a total of more than 6000 September rainfall records from every part of the U.S. mainland had to be analyzed. The period of years used was 1928 through 1957 in all but a few cases. In order to highlight the major features of the rainfall distribution and eliminate minor variations, a certain amount of smoothing of the data was required. For this reason, and particularly in mountainous areas, the maps should be used with caution since differences in elevation and exposure to the prevailing winds can sometimes cause large differences in rainfall between nearby locations.

Much of the irregularity in the rainfall patterns shown on the maps is due to the continuation in September of the spotty showery type of storms which also characterized the summer maps in this series. In addition, the high probability of five inches or more along the Southeast and Gulf coasts is clearly an indication that September is the middle of the Hurricane season.

These maps are an example of the use of past weather records for estimating future weather risks, the only reliable way at present to use weather information for planning more than a few days in advance. Of course, day-to-day plans should always be made with the aid of the latest weather broadcasts. ▲

AUGUST, 1960





## MERCHANDISING AIDS PROMOTION

### Chicks, Poults, Eggs

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**BRONZE** or Broadwhite poults for each week  
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Robert B. Fulton, Rt. 2, Box 25, Avonmore,  
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all purpose turkey with weights of  
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tioned 6-3 Ego-matic \$25; G.L.F. No. 300  
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Krupnick, 2215 Highway 9, Lakewood, N.J.  
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**MODEL DS 3500** eggs capacity for sale \$300.  
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Washer used one year \$125. Call Foxcroft  
Rockland, N.J.

## Knowledge soil fertility practices essential. Must use sound business approach.

This month FARM CHEMICALS starts a series on  
the need for more agronomically-oriented dealers  
in the fertilizer industry. Our story begins with  
a memo from Dr. Leo Orth, formerly the agrono-  
mist with Sinclair Petrochemicals, Inc.

### MEMO

To: Farm Chemicals  
From: Dr. Leo Orth, Agronomist  
Subject: The need for agronomically-oriented ferti-  
lizer dealers.

Over the past few months, we have talked about the  
idea or concept of an agronomically-oriented fertilizer  
dealer. For the benefit of your readers, here are the  
problems that we discussed:

1) What is an agronomically-oriented fertilizer dealer?

Agronomy is the science which deals with crop  
production and/or soil management. The dealer who  
sells a program of crop production will know the  
fertility practices essential for crop production and will  
sell the farmer on the results.

2) Isn't that the way most of the dealers in the Mid-  
west are doing it now?

No! A very small percentage of the dealers are  
carrying on a program such as this. Those that are  
have been very successful.

3) Are you suggesting that those not carrying on such  
a program aren't successful?

That's precisely the point. Rarely are such dealers  
successful—and my idea of success may differ with  
some—it's more than a good financial statement  
although this is essential—it is a dealer who has a  
satisfied clientele or repeat customers. Customers  
respect him for his knowledge of crop production and  
look to him as an authority.

In many cases those dealers not carrying on such a  
program are "selling" on price only—or frequently  
giving their product away. In my opinion this

doesn't auger very well for success, regardless of  
tonnage taken off their hands.

4) Aren't their farmers satisfied?

Generally they aren't, and you can't expect them to  
be. That's one of the reasons in some areas why  
farmers change dealers so frequently. They usually  
don't get the results they think they should and then  
blame it on the fertilizer or the dealer.

5) If a dealer such as you described above is so  
successful, why don't more of the dealers start on this  
program? Are the agronomics or crop production  
factors too complicated?

Certainly the agronomic considerations aren't too  
complicated. It takes an alert individual interested  
in crop production to do the job. He can easily learn  
through one or two years' experience in working with  
farmers in putting out test plots what it takes to  
produce crops efficiently and learn how his products  
can fill the need. He should, of course, attend all  
University and Extension meetings to become in-  
formed on latest developments, and progress in ferti-  
lizer usage. Then, too, the supplier can provide him  
with considerable information on his particular prod-  
ucts and program.

I think there are two main reasons why dealers  
haven't adapted such a program. In the first place  
fertilizer is a newcomer in the farm supply business.  
In a survey of Iowa dealers fertilizer sales represented  
only a small percentage of their gross sales. Most  
dealers aren't agronomically oriented and since the  
fertilizer business is such a small part of their overall it  
gets little support or little management attention. It  
may be used to bring in more business as a lead item.

Secondly, agribusiness has done a poor job in keep-  
ing records. They frequently don't know how much  
money they've made or lost on their operation until  
they go broke. Under these conditions you can't  
expect a dealer to invest time and money in personnel  
to develop and sell an agronomic program. He may



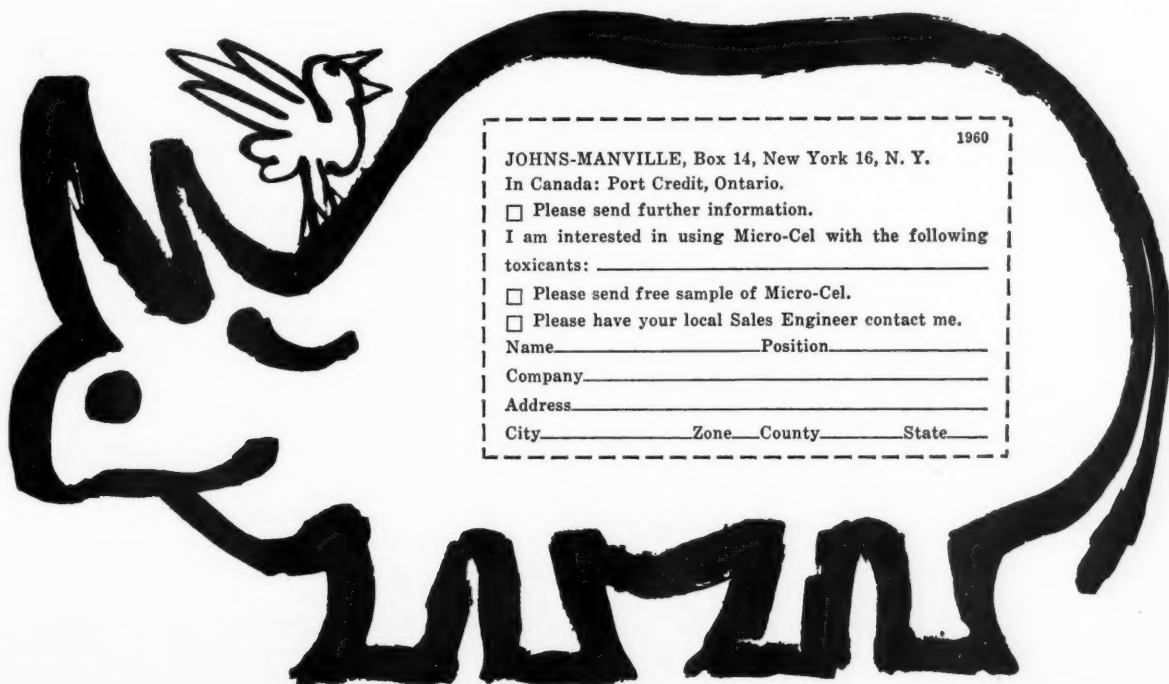
Electron micrographs showing plate-like Micro-Cel E and spherical Micro-Cel B structures.

1μ

## Micro-Cel is quite compatible!

Micro-Cel®, Johns-Manville's new synthetic calcium silicate, is chemically inert and is compatible with nearly all toxicants. Micro-Cel cuts shipping costs by permitting such high toxicant concentrations as 50% Heptachlor, 70% Toxaphene and 75% DDT. Micro-Cel's unique structural characteristics (surface areas up to 175 sq. m/gr) reduce caking, improve flowability, increase suspendability and extend shelf life. For further information, samples and technical assistance, mail in the coupon below!

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toxicants: \_\_\_\_\_  
☐ Please send free sample of Micro-Cel.  
☐ Please have your local Sales Engineer contact me.  
Name \_\_\_\_\_ Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

## **MERCHANDISING AIDS**

### **PROMOTION** (Continued)

not have the money, and if he does, he doesn't realize the benefits nor would he necessarily know how to carry out a program.

6) Do you think the situation is hopeless then? You don't expect the dealers to find this out by themselves, do you?

Certainly not. This is where an agronomically oriented industry enters the picture. I think all suppliers should take a good look at their dealers. They should spend little time on those who just can't or won't develop a good program. One way to get dealers supporting a program is to develop dealers who depend primarily on fertilizer for their livelihood, or dealers who have sufficiently good records so that they know what their business is doing and want it to show a profit. Both of these dealers can be sold on carrying out a crop production program. Some sort of franchise might be desirable. If the dealer has an investment in the business, he will tend to protect it.

7) If all suppliers did this, would there be enough qualified dealers to handle all the business? What alternatives would you suggest?

In the first place this wouldn't have to be done all at once. The various suppliers could set a target date, say 3 to 5 years hence, when they wanted all agronomically oriented dealers—by this time they would probably have to expand their production facilities—I've never seen a dealer start on a program such as this who hasn't consistently increased his business, even when other dealers are having decreases. Their customers are using more, while getting higher profits and thus can afford more.

This type of a dealer is a credit to his community, and as a matter of fact, he helps even the poor dealer. Although naturally two good dealers in the area are better for each other than one good and one poor one. A poor one always lowers the confidence of farmers in proper fertilizer usage.

#### **LET'S LOOK AT AN EXAMPLE**

8) I can see what you're suggesting, but could you give me an example?

Let's take a hypothetical case. Suppose a farmer has 60 acres of corn that requires fertilization, but he is not necessarily sold. Assume also that he has used his starter fertilizer in the row as a matter of habit. Now a good dealer selling ammonia to him for about \$8.00 per hundred sells him 100 pounds—based on plant population and other considerations. If this farmer gets a typical response, he should get a bushel increase from each 3 pounds of nitrogen, or a 27-bushel increase for the 82 pounds of actual nitrogen used. At a dollar a bushel, this would mean a profit of 19 bushels or dollars for the farmer, at a cost of approximately 30 cents a bushel. (*It is realized that this is giving too much credit to nitrogen, since the other costs, or phosphate and potash are not considered, but make possible such a response*).

Now assume another dealer sells his for \$7.00 a hundred. This would cost the farmer \$1 per acre less if he bought it, but because the dealer isn't making any money, he doesn't sell the farmer a program and

as a consequence the farmer loses profit of \$19 per acre on 60 acres, for a total loss of \$1,140.

I'm sure most farmers, if sold on a service and crop production program, would be willing to pay the dealer an extra dollar an acre for this service. There are several flaws in this illustration, but I think it demonstrates the point. I'm not suggesting that the dealer charge higher prices, but that the dealer should know his costs to support a program as outlined.

Probably the most of this information will be funneled through the supplier's salesman who has the most contact with the dealer. Other methods, bulletins, meetings, demonstrations, etc. are obvious.

9) The trade organizations, referring to the N.P.F.I., A.A.I., etc., how will they fit into this program?

There are still many problems associated with a growing industry that individual companies cannot solve alone. For example, the real value of fertilizer to the American public has never been sold—herein trade organizations can do a real job. Then, too, the status of the industry, within the industry and with associated industries needs to be raised—trade organizations can do a job here. They also can serve as a liaison between the University and other governmental agencies and the industry. Let me assure you they won't and can't be expected to do the job of selling for the dealer in his local area.

#### **ARE SUPPLIERS AGRONOMICALLY ORIENTED?**

10) Don't most suppliers today have agronomists and aren't they agronomically oriented?

Most of the majors have agronomists; however there are many smaller companies which don't employ one. Even though a company has an agronomist, this does not mean that its sales program is based on a sound agronomic program. Too frequently the sales personnel call the shots and the agronomist becomes just another salesman. The program to the dealer, as mentioned, must be carried through the salesman just as the dealer sells the program to the farmer. If management doesn't incorporate the agronomic approach in their program, then the salesman can ignore it for immediate volume or whatever other pressures which may face him. I know of one salesman who worked for a company for over a year and wasn't aware of the fact that they had an agronomist. His whole pitch was based on efficient fast delivery, quality product, credit and price. Obviously management wasn't incorporating agronomy in their merchandising program in this instance.

11) Would you summarize concisely what you've said?

Fertilizer suppliers must immediately start selling their dealers on a sound business approach with their sales program directed toward a crop production program. Concurrent with this the supplier must do what he can to see that his customers keep adequate records so they know their costs. The importance of an adequate profit to support an agronomically oriented program should be stressed—only through a good set of cost analyses can this be determined.

Suppliers should remember that strong dealer outlets are their lifeblood, so should be supported accordingly.

*Next month we'll bring you the story of a successful fertilizer dealer who put these agronomic principles into practice.* ▲



# READER SERVICE

*FREE INFORMATION to help you  
solve fertilizer, pesticide problems*

## Chemicals

### 239—STABILIZING AGENT FOR LIQUID FERTILIZERS

Stabilization of liquid fertilizers is the subject of a new technical data sheet just published by Minerals & Chemicals Corp. of America. The booklet describes the use of Attagel 30, a colloidal grade of Attapulgit, as an agent for the suspension of plant nutrients in water. Three-hole punched for loose leaf filing, the 8-page bulletin completely describes how use of Attagel 30 helps to overcome process and uniformity problems in liquid fertilizers. Types of fertilizers with which it has been successfully employed are presented. The 8-page data sheet also discusses how the material is used and gives detailed specifications for the limited amount of process equipment required. The sheet may be obtained by

CIRCLING 239 ON SERVICE CARD

### 240—SOLID BUTYNEDIOL 99% AVAILABLE

Antara Chemicals has introduced a new distilled grade of Butynediol. Meeting a specification of 99% minimum purity, the chemical intermediate is available in solid form. The new material is the preferred grade for exacting chemical synthesis, Antara says, and it can be used directly without recrystallization. Butynediol is described as a rare source of a safe, organic triple bond. It is a polyfunctional chemical which offers a convenient starting point for such products as insecticides, herbicides, solvents, and corrosion inhibitors. Further information and a 35-page guide to reactions and uses of Butynediol can be had by

CIRCLING 240 ON SERVICE CARD

### 241—NACCONOL

Fourteen physical forms of Nacconol are available from National Aniline Div., Allied Chemical Corp. The product is used in both plant foods and pesticides. As a wetting agent, it is reported to give liquid preparations improved coverage and sticking power. As a conditioner for dry mixes, Nacconol is said to help reduce caking and to promote freer flow. For details,

CIRCLE 241 ON SERVICE CARD

### 242—"SULPHUR MANUAL"

Texas Gulf Sulphur Co.'s newly issued "Sulphur Manual" is available to readers now using or planning to use sulfur, solid or molten. It is divided into four sections, followed by an Appendix. Section I discusses "The Sulphur Industry." Section II recommends procedures for "Shipping of Molten Sulphur." Section III details "Handling and Storage of Molten Sulphur," and Section IV, "Analysis of Sul-

phur." To obtain your copy of this interesting manual,

CIRCLE 242 ON SERVICE CARD

### 243—APPLYING SEVIN FROM THE AIR

Aerial application of Sevin for cotton insect control offers many practical advantages, according to Union Carbide Chemicals Co. Among those claimed by the manufacturer: Positive lasting control; only one material in the tank, since Sevin controls all major cotton insects; safer to use; and coverage growers can see, since Sevin Sprayable dries white and dust is readily visible. For details,

CIRCLE 243 ON SERVICE CARD

### 244—UREA-AMMONIA SOLUTIONS

John Deere Chemical Co. claims many advantages for its urea-ammonia solutions in the manufacture of liquid and dry fertilizers: improved physical properties of mixed goods, non-corrosive to equipment, safety in handling, and it resists leaching. Free technical information is available. Simply

CIRCLE 244 ON SERVICE CARD

### 245—R&H FUNGICIDES

Data on Dithane M-22 and Dithane Z-78 fungicides and Kelthane miticide is offered custom sprayers by Rohm & Haas Co. The company says that Dithane M-22, maneb, is the most versatile and widely used of all agricultural fungicides. Dithane Z-78, zineb, controls greasy spot and russetting on citrus fruits. Complete information will be yours, if you

CIRCLE 245 ON SERVICE CARD

### 246—CPG FOR FERTILIZER AND PESTICIDE MIXES

Colloidal Products Co. says its CPG dispersant-adjuvant is suggested for use with nitrogen solutions and mixed liquid fertilizer solutions when addition of emulsifiable Nemagon, Fumazone, 2,4-D or Aldrin is indicated. Used at one quart per 100 gallons of spray solution, added to the spray tank when it is almost full, CPG will stabilize pesticide-fertilizer solution combinations long enough to permit their application, Colloidal claims. For

additional information,  
CIRCLE 246 ON SERVICE CARD

### 247—FLORIDIN BOOKLET

"Floridin Company Products for Agricultural Chemical Processing" is a 16-page booklet available to the industry from Floridin Co. Beginning with general information on Florida fuller's earth and its uses in pesticide formulations, the bulletin contains sections on Diluex and Diluex A, Florex and Floridin, and Florigel-Fine Grade. To receive a copy of this helpful literature, just

CIRCLE 247 ON SERVICE CARD

### 248—NEW BULLETIN FROM HODAG CHEMICAL

A new bulletin describing the applications and tabulating the properties of 37 representative non-ionic surface active chemicals has been published by Hodag Chemical Corp. The products are divided into four groups: glycerol esters, other polyhydric alcohol esters, polyglycol esters and polyoxyethylene alkyl aryl ethers. Hodag's technical services laboratory is prepared to assist users in the application of nonionics. Copies are available by

CIRCLING 248 ON SERVICE CARD

## Process Equipment

### 249—PROCESSING CATALOG

Newest information on Sturtevant Mill Co.'s full line of dry processing equipment is contained in the firm's 1960 dry processing equipment catalog. Illustrated with photographs, flowsheets, tables and graphs, the eight-page booklet contains information on air separators, blenders, mixers, Micronizer fluid energy grinders, Pulver-Mill impact grinders, other crushing and milling machines, dens, elevators, granulators, screens, laboratory equipment and other machinery and accessories. Free copies are available. Simply

CIRCLE 249 ON SERVICE CARD

### 250—SAFETY-RELIEF VALVES

A new series of Safety-Relief Valves for refinery, chemical processing, power plant and general services is now available from Farris Engineering Corp. The new 1870 series is reported to provide precise blow-down ring control for gases and vapors, and safety relief for liquids in a wide range of application where maximum pressure is 300 psi. It has a one-piece stainless steel body and stainless steel disc which contains inlet pressure without other joints or gasketings. For complete information,

CIRCLE 250 ON SERVICE CARD

## how to use the READER SERVICE CARD

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- Print or type your name, position, company and address
- Clip and mail the Service Card



**See pages 50 and 51 for information  
on these Reader Service numbers:**

- 264—Controlling Dusting in Fertilizer Manufacture
- 265—Improved Model Langdon Vacuum Pump
- 266—Palm-Sized pH Meter from Sel-Rex
- 267—Bemis Introduces New Sewing Attachment

**251—BULK PLANTS**

Midstate Machinery Co. has prepared a bulletin on its new economical package plants for blending and mixing mixed fertilizer. The pre-engineered plants are designed for installation in a steel or frame building. They are supplied complete with equipment, assembly plans, and a choice of floor-plans. Capacities available include 15 tons per hour with one employee, and 30 tons per hour with two employees. For your copy of the bulletin

CIRCLE 251 ON SERVICE CARD

**252—ABBE MILL**

The improved Kent Abbe mill has six grinding rolls instead of three, reports Abbe Engineering Co. It can grind eight tons per hour of limestone to a fineness of 97% minus 100 mesh, and 10 to 12 tons per hour of Florida pebble phosphate rock to a fineness of 87% minus 100 mesh. The manufacturer will be happy to send you a bulletin containing complete information, if you

CIRCLE 252 ON SERVICE CARD

**Materials  
Handling**

**253—NEW VAN-TANK**

Transcold Corp. says its Van-Tank is a flexible liquid container which makes it possible to carry practically all types of liquids in any type of trailer. Those requiring temperature control may be carried in refrigerated vans. Capable of carrying 4,600 gallons in the 34 foot size, the Van-Tank is fabricated by Goodyear. It is molded of coated nylon fabric and vulcanized to produce a strong, yet flexible, seamless one piece unit. Liquids may be carried in one direction, and then the Van-Tank can be folded into a compact unit for return trip with a dry freight load. For complete information

CIRCLE 253 ON SERVICE CARD

**254—FLINGER FROM FINCO**

Designed to handle practically all dry bulk materials, the Flinger makes loading of box-cars a one-man task, reports the newly-formed Conveyor Div. of Finco, Inc. The loader-piler can be had in four styles and nine models. It utilizes a short, high-speed rubber belt to increase the velocity of falling material in the feed-spout. As the belt flexes over a pulley, material is flung in a compact stream accurately as directed. Commonly hung on a track-side wall or structural member where loading docks aren't feasible or possible, the Flinger is also made as a wheel-mounted type that can be moved where and when required. In addition, the Flinger is made in models that mount at

the head-end discharge point of permanent or portable conveyors. Finco claims that the Flinger can easily increase stockpile capacities 10 times. For details,

CIRCLE 254 ON SERVICE CARD

**255—RAILWAY TRACK SCALES**

All-steel fabricated Murphy-Cardinal railway track scales are described in a new bulletin from Cardinal Scale Mfg. Co. The firm says these units are designed and manufactured in accordance with A.R.E.A. specifications, for installation with either full floating, rigid concrete, timber or steel plate deck, and are equipped with double link suspension, which eliminates platform shock, saves wear and tear on the pivots and bearings and prolongs the useful life of the scale. The scales are manufactured in standard capacities of 120-tons through 200-tons, with platform sizes of 50' x 10' up through 110' x 10' as standard. To obtain the bulletin,

CIRCLE 255 ON SERVICE CARD

**256—USE OF TRIPLEX  
MAST DESCRIBED**

Specifications of Yale Triplex masts which are now available for use with 2000-3000 pound capacity versions of Yale Series GP-52 gasoline-powered, and K-46, K-47 and K-58 electrical industrial lift trucks are included in a bulletin just issued by Yale & Towne Mfg. Co. The mast is an extra-high lift, hydraulically-operated unit with normal collapsed-mast height headroom clearance, reports the firm's Yale Materials Handling Div. Trucks equipped with the Triplex mast are particularly suited to operation in plants which have low ceilings or doorways in some areas, yet require high stacking in others. Get your copy of the six-page bulletin by

CIRCLING 256 ON SERVICE CARD

**257—AIR CONVEYING  
SYSTEMS**

Air conveying systems for the bulk handling of powdered or granular materials are described in a new brochure published by Flo-Tronics, Inc. The publication describes numerous variations possible in the engineering of air conveying systems, including completely automated and programmed process controls. It is illustrated with diagrams showing typical equipment and systems arrangements. For your copy,

CIRCLE 257 ON SERVICE CARD

**258—S-A CARRIERS**

Conveying efficiency depends on what's under the belt in quality-engineered conveyor components, reports Stephens-Adamson Mfg. Co. The company says that no component has a greater bearing

on conveyor performance than the carriers, carrying the load. Features of its carriers include spun one-piece rollers, positive lubrication, labyrinth seals, and rugged frame construction. A bulletin contains complete information. Just

CIRCLE 258 ON SERVICE CARD

**259—COLE TANKS**

"Tanks and Equipment for the Plant Food Industry" is the title of a booklet available to readers from R. D. Cole Mfg. Co. The firm produces aluminum tanks, pressure vessels, chemical and processing equipment. You can get a free copy of the booklet, if you

CIRCLE 259 ON SERVICE CARD

**260—NEW PE COMPOUND**

Union Carbide Plastics Co. has developed a new high-density polyethylene compound used in coating multiwall bags. The material is reported to virtually cut in half coating weights required to give paper excellent impermeability to moisture, grease and oils. Other advantages claimed: superior scuff and abrasion resistance, improved slip properties and higher heat resistance. For details,

CIRCLE 260 ON SERVICE CARD

**Application  
Equipment**

**261—SCHELM ANNOUNCES  
NEW APPLICATOR**

The Model "G" controlled-flow pull-type applicator has been announced by Schelm Brothers, Inc. Among the features Schelm reports: There are no pumps or compressors to maintain in the gravity-vacuum-type applicator; accurate rate of flow is maintained regardless of solution level in the 300 gallon iron tank; available with all plastic spray boom, front mounted, in 18', 24', or 33' boom lengths; high range of application, from 5% total weight of material per acre to 7541% total weight of material per acre, or any amount in between, at travel speeds up to 15 mph. Literature contains complete information. Obtain your copy by

CIRCLING 261 ON SERVICE CARD

**262—THE AG-CAT**

Designed specifically for spraying and dusting, the Ag-Cat is certificated for a 1200 lb. hopper load with a 220 hp Continental, reports Grumman Aircraft Engineering Corp. Among its features: external rigging, easily accessible components, interchangeable ailerons and wing panels. Complete information is available. Simply

CIRCLE 262 ON SERVICE CARD

**263—TRAK-PAK**

Back-up, hook-up and you're ready to spray with the new tractor-mounted Trak-Pak sprayer unit, reports Hanson Equipment Co. Designed to save time and reduce work during the rush of the growing season, the unit mounts on any standard 3-point hydraulic hitch and can be attached or detached from the tractor in minutes. The Trak-Pak can be equipped with either a boom or a Brodjet sprayer, and is available with a choice of piston-type or nylon-roller-type pumps. Complete information is available by

CIRCLING 263 ON SERVICE CARD

THE Commissioner of Internal Revenue is asking for more detailed reporting on income tax returns beginning with 1960. Employee returns will be the same, but **employers** will be required to submit more detailed reports.

Here are some questions and answers on employer reporting of employee's expenses:

**QUESTION: Does the regulation cover all types of business organizations?**

**ANSWER:** Yes, The regulation applies to all employers such as corporations, partnerships, and sole proprietors. However, the details vary with the form of organization.

**QUESTION: What are corporations required to do?**

**ANSWER:** On Schedule E of Form 1120 for corporations, the section "Compensation of Officers" is being expanded. In addition to the payments designated as compensation, all expense account allowances paid to or on behalf of the officers must be reported.

**QUESTION: Does this expense reporting apply to all officers of the corporation?**

**ANSWERS:** Yes. The information will be required of all corporate officers. However, if there are more than twenty-five officers, it then applies only to the twenty-five highest paid officers.

**QUESTION: What are partnerships required to do on this new reporting procedure?**

**ANSWER:** Form 1065 for Partnerships will be expanded similarly to the corporation form. It will require similar information to be reported about all partners. This includes limited partners of the firm.

**QUESTION: What are sole proprietorships required to do under the provisions of this new reporting?**

**ANSWER:** Schedule C of Form 1040 for Individual Proprietorships will require similarly information. This reporting covers the owner of the business and his five highest paid employees based on the total compensation plus expense account allowances.

**QUESTION: Are there any exemptions to this rule for small firms?**

**ANSWER:** Yes. This detailed reporting is not required for employees who receive less than \$10,000 including compensation and expense account allowances paid to or on behalf of them in one taxable year.

**QUESTION: What does "expense account allowances" mean in this regulation?**

**ANSWER:** Basically, it covers two areas of payment by the tax reporting firm:

- (1) Money received as advances or reimbursements other than regular compensation.
- (2) Money paid by the firm for expenses incurred by or on behalf of an officer, partner, employee or owner. This includes all amounts charged through any type of credit card.

**QUESTION: Will there be any other new information required by this new regulation?**

**ANSWER:** Yes. You will be required to report if you

# NEW tax REPORTING

By PAUL LOCKWOOD

claimed a deduction for:

1. Recreation facilities including a hunting lodge, ranch or farm, fishing camp, or resort property.
2. Accommodations for customers, officers or employees including family members.
3. Convention or business meeting expenses of family members of officers or employees.
4. Vacations for officers or employees or members of their families, but not vacation pay reported on Form W-2.
5. Boat or yacht used for entertainment of customers or personal use of officers, employees or their families.

**QUESTION: How much detail is necessary on reporting these expenses?**

**ANSWER:** The reporting on the employer's income tax return will show a dollar amount for employees.

However, according to Revenue Ruling 59-396 the employee must be required to submit written statements to the employer. These statements must show the "business nature and the amount of expenses incurred, broken down into broad categories, such as transportation, meals, and lodging while away from home overnight, and other business expenses."

**QUESTION: Can a per diem expense allowance be used?**

**ANSWER:** On the new reporting section, you do not detail the basis for allowances. However, you will save time and trouble for yourself and your employees when you adopt a per diem and mileage allowance.

If your per diem allowance is no more than \$15 a day and your mileage allowance is no more than 12½¢ per mile, your employees do not need to account for this on their income tax return.

**QUESTION: Is it absolutely necessary to complete the new sections on expense accounts on the income tax return?**

**ANSWER:** There is no penalty for failure to complete this section. However, it is fairly obvious that since the Internal Revenue Service is using this to stop abuses, they will check it. Failure to complete the section will probably lead to a more thorough examination of your income tax return. ▲

# Unit Loads and Bulk Containers

**D**URING AN MCA Symposium on the Packaging and Transportation of Chemical Products, R. W. Puder, Supervisor, Materials Handling, Packaging and Distribution of Du Pont Co., discussed two distribution systems in which the MCA Product Distribution Subcommittee is very active. These are unit load and bulk container systems. These systems have become increasingly more important as most manufacturers are taking a close look at their methods of receiving, storing, handling, and shipping their materials in an effort to reduce cost.

In the chemical industry the use of unit loads of bagged material has increased substantially in the past several years. The shipment of unit loads usually requires the very minimum in investment for both the supplier and the customers. These shipments are made at little or no savings to the supplier since the savings in labor almost always are off-set by the additional material and equipment cost. The savings in unit loads are realized by the customer in the amount of labor saved in unloading, handling, and storing the material when it reaches his plant. In addition, savings may result from better warehouse utilization, due to more stable and efficient pallet loads.

There is a wide variety of returnable and expendable pallets available today. Each variety has attractive features to offer. The returnable wooden or metal pallets usually range in cost from \$4.50 to \$16.00, and the expendable wooden or fibre pallets range from \$0.40 to \$1.75.

Some of the general advantages and disadvantages of a pallet system are:

## **Advantages**

- 1) Usually adopted with minimum effort.
- 2) Can be handled with standard fork truck. In some cases the addition of nominal cost special equipment may be required.
- 3) Ease of inventory.
- 4) Improved warehousing.
- 5) Less loss from breakage in unit handling, warehousing, and transportation.
- 6) Labor savings in unloading, handling, and warehousing at the customer location.

## **Disadvantages**

- 1) Investment in pallets in the case of returnable and higher operating cost in the case of expendables.
- 2) Additional car preparation when double tiering

rail shipments. Double tiering is often required to meet minimum carload weights.

The Product Distribution Subcommittee of the Manufacturing Chemists' Association has defined a non-returnable or an expendable bulk container as one which is designed to properly handle, for one movement only, dry particulate solids from point of origin to the customer's process. The upper load limit, under this definition, has been set tentatively at a ton.

Considerable progress is being made with expendable bulk containers with capacities in the range of 1,000 to 2,000 lbs. Some examples of typical expendable bulk containers that are available today are the Tri-Wall, Du Pont Pillar-Pac, Titan T-Pack, Gaylord Drum Pack, wooden and wirebound box. Sizes of these containers range from 20-50 cu. ft. These containers are usually engineered for specific application with different size and strength specifications.

Some of the advantages and disadvantages of an expendable bulk container system are:

## **Advantages**

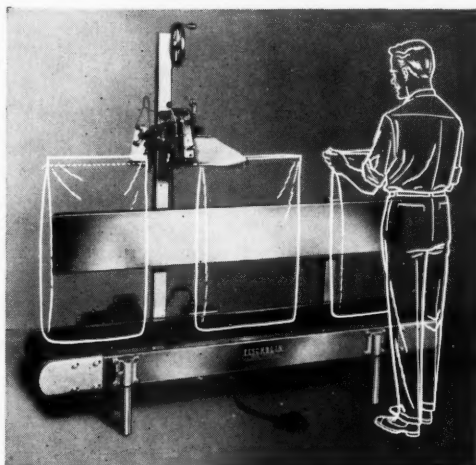
- 1) Easily assembled and filled.
- 2) Minimized handling labor.
- 3) Improved warehouse utilization.
- 4) Elimination of warehouse pallets and their maintenance.
- 5) Minimized loss of product.
- 6) Ease of inventory.
- 7) Possible customer re-use.

## **Disadvantages**

- 1) Requires assembly, filling, and dumping equipment.
- 2) Higher container cost.

In analyzing a unit load or bulk container distribution problem, each of the appropriate systems should be considered and evaluated for the specific application to arrive at the optimum system. All of the pallets, expendable and returnable bulk containers which were discussed by Puder have many attractive features to offer. Each must be considered on its own merit. Through the continuing efforts of MCA, recommendations for each of the systems will be developed commensurate with cost, protection of product quality, safety, and flexibility. These standards will serve as a guide and will be available for use by the industry. ▲

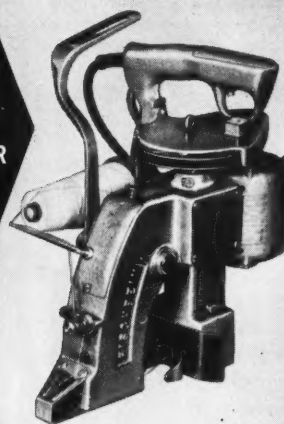


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# SBA LOAN FACTS

*In response to many inquiries about loan policies of the U. S. Small Business Administration, FARM CHEMICALS assigned a Washington correspondent to interview SBA officials and to give their verbatim answers to questions about the loan programs.*

By LARSTON D. FARRAR\*

**T**HE U. S. Small Business Administration, since its creation in 1953, has been making loans either directly or in participation with commercial banks to small businessmen, including fertilizer dealers, small chemical companies and many others who are eligible and have been approved for such credit.

In fact, the SBA has made literally thousands of loans, for a total of almost *one billion dollars* in the past seven years, which indicates it is no small operation.

After the passage of the Small Business Investment Act of 1958, SBA began to make long-term loans to investment companies set up by private individuals, who, in turn, re-lend to small businessmen the funds thus made available to them. This latter program has been carried on through the Investment Division of SBA, headed by its own Deputy Administrator, and it has nothing whatever to do with, or in common with, SBA's traditional money-lending role to small businessmen, including fertilizer dealers and those who deal in farm supplies of all kinds.

It is essential for those who are thinking of borrowing money from SBA to bear in mind the distinctions between the two separate programs, for they are entirely separate and distinct operations. A small businessman, as such, *cannot* borrow money from SBA's Investment Division. To do this, he must join with other small businessmen, or big businessmen, as he wishes, and set up a Small Business Investment Company.

The questions asked of SBA officials and their answers about the regular SBA loan programs are as follows:

\* Larston D. Farrar, a Washington business writer and lecturer, is the author of many books, his latest being *SUCCESSFUL WRITERS AND HOW THEY WORK* (Hawthorn).

*What types of loans are available to farm chemical dealers from the SBA and who is eligible?*

There are five types of SBA loans. These are: (1) participation; (2) direct; (3) Limited Loan Participation; (4) disaster, and (5) rural development loans.

A "participation" loan is one made jointly by the SBA and a bank or other lending institution. Two-thirds of the agency's loan approvals are in this category. In many cases of bank-participation loan agreements, the bank will help the potential borrower with the filing of the loan application. If not, the potential borrower should visit an SBA field office, discuss his need with a financial specialist, and obtain the proper loan forms.

A "direct" loan is one in which the SBA advances all of the funds. The SBA makes direct loans only after the possibility of negotiating a bank-participation agreement has been exhausted. The SBA will *not* make any loan, direct or participation, until the potential borrower has tried, unsuccessfully, to get a regular bank loan. By law, the SBA can make loans only when financing is not otherwise available on reasonable terms. The applicant should first seek a needed loan from his local bank. If the bank will not make the loan by itself, but is willing to do so if the SBA agrees to participate, the applicant may apply for a bank-SBA participation loan. If the bank won't make a loan even with SBA participation, the applicant then may apply for a direct loan. His application *must* be accompanied by a letter from the bank stating that it is unable to make the loan. If the business is in a city of 200,000 population or more, his SBA application must be accompanied by letters from two banks stating that they cannot make the requested loan.

## LIMITED PARTICIPATION

A "Limited Loan Participation" loan is designed especially to help small retailers, service establishments, professional men, and businessmen. As a rule these men have little in the way of tangible collateral they can pledge, but they often have good earnings records, competent management ability, and a creditable record with local banks for meeting their obligations.

Under this plan, SBA will participate with a bank in a loan to a small businessman up to a maximum of \$15,000, or 75 per cent of the total amount of the loan, whichever is the lesser. Generally, the participating bank's share in the loan must represent additional exposure on the part of the bank equal to not less than 25 per cent of the total amount of the loan. The maximum maturity on Limited Loan Participation agreements is five years. One of these loans is obtained in the same way as for the other type of bank-participation loan.

A "disaster" loan is made to businessmen, professional men, or individuals, in areas designated as "disaster areas" by a federal agency for any of a number of reasons. These are low-interest loans—three per cent—made to tide over those stricken by disaster until they can get on their feet. Strictly speaking, any citizen in a disaster area can get a disaster loan, if he can show that his difficulties are due to the flood, hurricane, or other disaster which has struck the area.

A "rural development loan" is a loan made to a

professional man or businessman in a rural area, upon a finding by the Department of Agriculture and the SBA that such a loan would prevent unemployment, or increase employment, in a rural area. Such a loan can be made in all of the foregoing categories.

*What are the maximum amounts available to farm chemical dealers?*

The amount you may borrow from SBA depends on how much you need to carry out the intended purpose of the loan. The largest loan SBA can make to any one borrower is \$350,000—the maximum both for a direct agency loan and for the SBA share in a participation loan. The SBA is authorized to lend more than \$350,000 to groups of professional men or businessmen who may have formed a corporation. In the case of these so-called "pool loans," the maximum amount is \$350,000 multiplied by the number of small firms, or professional men, who formed the corporation.

### REPAYMENT TERMS

*What are the terms of repayment on a loan?*

The SBA's business loans generally are repayable in regular installments, usually monthly, including interest on the unpaid balance. General loans may be for as long as 10 years, loans under the Limited Loan Participation plan for a maximum of five years, and pool loans for a maximum of 20 years. The interest rate on SBA's direct loans has been set at 5.5 per cent per annum. In participation loans, the bank may set the rate of interest on the entire loan, provided it does not exceed 5.5 per cent per annum. The interest rate on pool loans is five per cent per annum.

*How long must I wait, normally, for action on a loan?*

The SBA acts promptly on all applications, and in most cases a decision can be given within about three weeks. However, the time required to process an application depends in part upon the care with which the applicant has prepared his loan request, the completeness of the information he has furnished, and the amount of work necessary for the Small Business Administration to give full consideration to all elements of the application.

As pointed out previously, the agency usually can act more quickly on an application for a participation loan than on one for a direct loan, since the bank provides the SBA with much of the necessary credit information.

*How can I determine whether I qualify as a small business?*

There are two important considerations here. First, as defined in the Small Business Act, your firm must be independently owned and operated and not dominant in its field. Second, you must meet the SBA's criteria in regard to dollar volume of business. In general, the agency classifies a wholesale concern as small if its yearly sales are \$5,000,000 or less, and a retail or service trades firm as small if its yearly sales or receipts are \$1,000,000 or less.

*What sort of records and information will I need to present?*

In considering an application for either a participation or a direct loan, the SBA will want the same kind of information that a bank needs when weighing a

loan request. The agency will want to know the proposed purpose of the loan; your financial condition; how you propose to repay the loan, and the available collateral.

*Where do I go to apply for an SBA loan? Whom do I see?*

As indicated, you should first see your local bank about a bank loan, or a bank-SBA participation loan. If the bank cannot extend financing on its own, or in participation with the SBA, you may then apply to the agency for a direct Government loan. The local bank most likely can give you the address of the nearest of the SBA's 37 field offices, which are located in major business centers across the nation. You can obtain the address of the nearest field office through written inquiry to the U. S. Small Business Administration, 811 Vermont Avenue, N. W., Washington 25, D. C.

*Can I use part of an SBA loan to pay off a first mortgage against my place of business? Can I use a part of such a loan to liquidate other indebtedness against my business?*

In general, the SBA will allow the use of proceeds of a loan to pay off a first mortgage against a property only when the mortgage has already been substantially repaid and a relatively small part of it remains due. In such cases, the funds may be used to pay off the first mortgage holder and the SBA will then take a first mortgage as collateral. If the prospective borrower has a first mortgage on his property that has a long time to run and is on favorable terms, the SBA will not advance funds to pay it off.

Many of the business loans approved by the SBA are used to pay off various types of indebtedness that the businessman has incurred. It is often advantageous to the borrower to consolidate all of his debt obligations in this manner.

*How far back should I be required to submit an operating statement?*

Detailed financial statements covering at least three years usually are required, and in some cases the SBA may ask for statements covering the past five years.

*Can I make a loan to improve my business structure, expand it, re-equip it and renovate it, or otherwise to make it more modern?*

Yes. Many SBA loans are made for these purposes. Loans are made by the SBA to finance business construction, conversion or expansion; to finance the purchase of new equipment, facilities, machinery, supplies or materials, and to supply working capital.

*If I am turned down by a regional office, can I appeal to the Washington headquarters office?*

It is not necessary to make such an appeal, since regional offices, while they have authority to approve the smaller SBA loans, do not have authority to decline them—they can only recommend to the Administrator in Washington that they be declined. Such loans are always reviewed in Washington. When a loan application is declined by the Washington office, the applicant may appeal for reconsideration if he can show that he can successfully overcome the objections that the Small Business Administration had for refusing the loan. ▲

# NEWS OF THE INDUSTRY

## PHOSPHORIC ACID EXPANSION STUDIED BY CYANAMID

Corporate approval for an engineering study of the feasibility of doubling phosphoric acid production has been announced by C. D. Siverd, general manager of American Cyanamid Co.'s Agricultural Div. Final decision on the project will not be made until completion of the study.

"This is part of Cyanamid's long-range program to make ever-increasing supplies of essential plant food available for agriculture, especially in the heavy crop-producing areas of the southeast and midwest," Siverd said. "The high analysis—54%  $P_2O_5$ —of phosphoric acid makes this an economical source of phosphorus in mixed fertilizers."

## SPENCER BOARD DECLARES 2-FOR-1 STOCK SPLIT-UP

Spencer Chemical Co.'s board of directors on June 16 declared a two-for-one stock split-up in the form of a 100 per cent stock dividend on the issued and outstanding common stock of the company payable not later than July 6, 1960 to holders of record at the close of business on June 29. Approval of the proposed increase in the authorized common stock of the company from 2,000,000 to 5,000,000 shares was given by Spencer shareholders at a meeting in Kansas City on June 28.

The stock dividend was declared in accordance with provisions of the Agreement and Plan of Reorganization, as amended, dated May 17, 1960, between Spencer and The Pittsburg and Midway Coal Mining Co. whereby Spencer acquired the business and assets of Pittsburg. The Agreement and Plan of Reorganization was also approved by the Spencer shareholders at the June 28 meeting.

Spencer President John C. Denton stated, "We are extremely pleased to have completed the acquisition of The Pittsburg and Midway Coal Mining Company which we believe will prove to be a valuable addition to our company's activities."

Denton indicated that this acquisition should provide sound diversification and should assist in

reducing the fluctuations in Spencer sales and net income which in the past have resulted from the strongly seasonal nature of a large portion of its business. During its fiscal year ended March 31, 1960, Pittsburg and Midway had sales in excess of \$16,000,000 and net income of approximately \$1,750,000. Mr. Denton further pointed out that the mining skills which Pittsburg brings to the Spencer organization might well serve as a basis for future expansion into other chemically related mining fields.

## NEW TIFTON, GA. PLANT



A new fertilizer manufacturing plant, McLeod's Fertilizers, has been completed and placed in operation at Tifton, Ga.

John D. McLeod, president and owner, planned the Tifton operation when railroad service to Omega, 10 miles away, was discontinued. He will continue to use the company's old plant there, Omega Fertilizer Works, for bagging fertilizer made in the new Tifton plant. A two-way radio system coordinates operations between the two locations.

The new structure, on a 3 acre tract, is 120 by 220 feet, produces 45 tons per hour, and has storage capacity for 12,000 tons of fertilizer.

McLeod also has purchased the old ACL railroad depot in Omega, and has moved it to Tifton for use partly as an office and partly for storage of nitrogen.

## BROOKS FIRM CHANGES ITS NAME

Douglas N. Brooks, president, reports that Brooks Rotameter Co. has changed its name to Brooks Instrument Co., Inc. The new name is more definitive of the company's expanded activity and broader service, Brooks said.

## CALSPRAY CONSOLIDATES EASTERN DISTRICTS

California Spray-Chemical Corp. has consolidated its Mid-Atlantic and New England districts. According to M. E. Wierenga, Calspray's marketing manager and vice-president, the move will give the company more effective customer contact and will result in substantial administrative and equipment economies.

Manager for the new district is Dr. Robert T. Wallace, who had managed the Mid-Atlantic district. He is being assisted by Charles Lupsha, former assistant to marketing manager and most recently manager of the New England territory.

## NPFI DISTRIBUTES BULLETIN ON A. N. BEHAVIOR IN FIRES

To answer queries concerning the behavior of ammonium nitrate under fire conditions, the National Plant Food Institute is distributing, as a public service, a bulletin prepared by the National Fire Protection Association.

The bulletin, "Ammonium Nitrate—Behavior in Fires," was written by Chester I. Babcock, manager, National Fire Protection Association, and may be obtained through NPFI at 10 cents per copy.

Mail orders to National Plant Food Institute, 1700 K Street, N. W., Washington 6, D. C.

## FARMERS CHEMICAL CO. CELEBRATES SAFETY RECORD

Farmers Chemical Co. on April 5 completed two full years of operation without a disabling injury. The occasion was celebrated on June 7 by a crowd of 400 representing the employees and their families.

Howard A. Cowden, company president, delivered the congratulatory address, and Olin Hughes, safety engineer of MFA Mutual Insurance Co., presented commemorative safety plaques. Following the addresses, a bar-b-que and informal entertainment program were held. Individual safety awards were made by Walter R. Horn, FCC general manager, to employees who made this half-million safe man-hour record possible.



### **SIMPLOT ACQUIRES ANACONDA FACILITIES**

The Anaconda Co. and J. R. Simplot Co. have announced that Simplot has acquired all fertilizer plant facilities of The Anaconda Co. at Anaconda, Montana, and has leased Anaconda's phosphate properties at Conda, Idaho, on a long-term basis.

The Anaconda line of fertilizers will continue to be available. Anaconda will operate the phosphoric acid and ammonium phosphate facilities at Anaconda for Simplot. Marketing will be done by the Simplot Co.

Simplot also has reported that an expansion program now underway at its Pocatello, Idaho, fertilizer plant is designed to double its present 500-ton-per-day phosphoric acid and triple superphosphate fertilizer production to 1,000 tons-per-day. This expansion is expected to be completed this year so that the added production will be available for the fertilizer season next spring.

On July 1, Bernard L. Brown joined the Simplot firm as agronomist for the Minerals and Chemical Div. He will work with industry representatives, college and experiment station personnel, and consumers in developing soil fertility data and programs aimed at customer service improvement. He goes to the company from Montana State College where he had been extension soils specialist since April 1958.

### **MERCK LAUNCHES BROAD BEEF CATTLE PROGRAM**

Expansion in products for beef cattle nutrition was announced recently by Merck Chemical Div. Merck has begun nationwide marketing of dynafac for the beef feeding industry, under an agreement with Armour and Company, Chicago.

James E. McCabe, marketing director for Merck agricultural products said Armour, in turn, becomes distributor for Merck "Agrozyme."

Dynafac premix was developed four years ago by Armour. Controlled tests, both in commercial feedlots and at state agricultural college experiment stations, show dynafac provides significant weight

gains and produces earlier bloom, carcass improvement, and improved feed conversion. Feeder cattle go on full feed faster when dynafac is used, these tests show.

### **OLIN MATHIESON FORMS TWO NEW DEPARTMENTS**

Formation of two new departments for process development in the Chemicals Div. of Olin Mathieson Chemical Corp. has been announced by Edward Block, senior vice president and general manager of the division.

M. C. Metzger has been named director of the new development department for Blockson Chemicals, Joliet, Ill. C. S. King becomes associate director.

B. H. Nicolaisen has been named director of the new development department, industrial chemicals, at Niagara Falls, N. Y. Dr. W. C. Gardiner has been named manager, electrochemicals section, development department, industrial chemicals.

C. E. Rowe continues as director

of development, organic chemicals, Brandenburg, Ky.

Block said these development departments will be responsible for pilot plant operations for new products and processes, improvement of present processes, related laboratory research, and certain special research.

### **DUPONT WINS VERDICT**

A \$188,011.02 damage suit against DuPont Company alleging weed killer injury to cotton crops in 1957 and 1958 resulted in a jury verdict for DuPont in the Arizona Superior Court.

The plaintiff, A. S. & R. Farms, Inc., had filed suit May 22, 1959, alleging that Du Pont's monuron weed killer, applied to 716 acres at lay-by time in 1957, injured cotton crops both that year and the year following.

Technical evidence was presented by expert witnesses during the trial to show that the use of the weed killer was a sound practice and based on extensive trials in many areas.

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## NEWS OF THE INDUSTRY

### NEW PROCESS TO PROVIDE NITRATE OF POTASH AT CHEMICAL FERTILIZER PRICES

American Metal Climax, Inc. will construct a new \$7 million plant in Vicksburg, Mississippi to produce nitrate of potash and chlorine, Frank Coolbaugh, president, announced on July 8.

The new plant will make nitrate of potash available for the first time at prices in the range of presently used fertilizer chemicals, he said. Employing a new process, the plant will be operated by Southwest Potash Corporation, a division of American Metal Climax, Inc.

According to Thomas W. Childs, president of Southwest Potash Corporation, the new process has been under development for five years and has been pilot-plant tested in association with Jacobs Engineering Co. and the Colorado School of Mines Research Foundation at Golden, Colorado.

Childs said that engineering and construction of the Vicksburg facility will begin immediately, and that operations are scheduled to begin in October 1961. The plant will be located adjacent to the local operations of Spencer Chemical Company and the main line of Illinois Central Railroad.

Nitrate of potash is one of the best fertilizer materials for many

crops with important potentialities in high analysis mixed fertilizers, the company reported. The product has not heretofore been used extensively because of its high price. Its combined potash-nitrogen plant nutrient values of 60 per cent make this compound one of the most highly concentrated plant foods available.

Nitrate of potash is expected to find wide use in the formulation of fertilizers for tobacco, citrus, truck and other farm crops which require potash free of chlorine and sulfur and nitrogen in the nitrate form. Nitrate of potash from the new plant is expected to extend industrial uses of the material far beyond its present applications in heat-treat salts, black powder, pyrotechnics, and frit and ceramics.

The plant will be constructed and engineered for easy and economical expansion, and for the production of associated chemicals.

#### "LONG RUN" PICTURE OF SULFUR INDUSTRY "PROMISING"

In the "long run" the future of the sulfur industry "looks promising," an international congress of chemical engineers was told in Mexico City recently.

"One should not become alarmed about the future of the sulfur industry," Gino Paul Giusti, Texas Gulf Sulphur Co., told a joint meeting of Instituto Mexicano de Ingenieros Quimicos and the American Institute of Chemical Engineers. "In the short run there may be an oversupply; but, in the long run the future looks promising."

Current sulfur prices are "quite low," but there is a case for both increasing or holding present prices, the lower prices tending to increase demand, he said.

Present consumption of sulfur in the Free World is 16 million long tons, of which the United States produces 5.8 million tons. By 1970 the Free World is expected to consume from 24 to 28 million long tons, of which the United States is expected to produce 9 million tons.

Today more than 40 countries produce some form of sulfur. The principal producers of elemental sulfur, in

decreasing order, are the United States, Mexico, France and Canada.

The sulfur industry, like other industries, has problems in rising wages, materials and freight rates, and low sulfur prices. The greatest factor in these low prices is production, "too much, too soon," he said. In the past 20 years, wages have increased 260 per cent, metals and metal products 150 per cent, while the price of sulfur has increased less than 50 per cent, he said.

#### BARCUS DISCUSSES PHOSPHATE MINING AT VERNAL, UTAH

Robert K. Barcus, assistant manager of the San Francisco Chemical Co., says that development of a large deposit of phosphate in the Vernal, Utah, area could be as near to a perpetual mining process as possible.

Addressing the Salt Lake Rotary Club, Barcus described the process by which the medium to low grade ores in the area north of Vernal could be mined profitably as has been accomplished in the copper industry.

At present, the developing firm plans a 6,000-ton-a-day crushing plant and a 14,000-ton-a-day flotation plant. Future plans call for more similar plants when distribution problems can be worked out, Barcus said.

"The phosphate deposits in the area are a mining dream—regular, uniform, unfaulted deposits," he said. "The mining process will not present the problems it has in other areas."

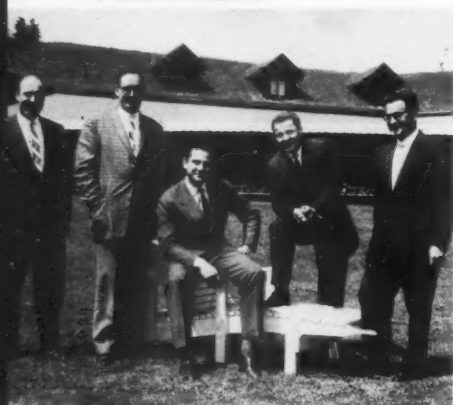
One of the great problems the company does face is the absence of a railroad in the area. He said he had been told Vernal was the largest community in the United States without a railroad within 50 miles.

Until other arrangements can be made, he said, the company could sell to only one buyer, Western Phosphates, Inc., at Garfield, Utah.

The ore will be shipped by trucks from the mill to the plant.

A new, 106-mile, 69,000-volt transmission line will be installed by the Utah Power & Light Co. from its Carbon county, Utah, plant to the project, and water wells have been developed on the land, he said.

#### NEW OFFICERS



Quebec Fertilizers Inc. has elected Guy Gubbay (center) its president. He is Montreal district manager of William Houde Ltd. Other new officers (l. to r.) are: Vice president—Harold Barrett, Canadian Industries Ltd.; executive director—Rene Reid, International Fertilizers; Gubbay, agronomic committee chairman—Marcel Roy, Canada Packers Ltd.; and advertising and public relations chairman—Arthur O'Donoghue, Cyanamid of Canada, Limited.

## COTTON COUNCIL "AGHAST" AT FAILURE TO LIMIT COTTON TEXTILE IMPORTS

In a statement issued by its president, J. Craig Smith, The National Cotton Council said recently it is "aghast and bitterly disappointed" over Tariff Commission failure to limit cotton textile imports.

The statement was issued when the council learned that the Commission decided by vote of four to two "that importation of articles containing cotton were not rendering or tending to render ineffective or materially interfering with the Department of Agriculture's cotton export subsidy program."

The council had sought relief under Section 22 of the Agricultural Adjustment Act.

## PRICE CHANGES

**Ammonium nitrate.** Monsanto Chemical Co. has increased the base price for the period January 1, 1961 to July 31, 1961 to \$70 a ton, up from \$68 in the current base price period. Discount price from August 1 to Sept. 30 will be \$64 a ton, and from October 1 to December 31, 1960, \$67 a ton.

**Nitrogen solutions,** manufacturing type, will be priced by Monsanto at \$132 per net ton from January 1, 1961 to June 30, 1961, up from \$128. From July 1, 1960 to December 31, 1960, manufacturing type is priced at \$126 a ton.

## HOW MUCH FERTILITY LEAVES A FARM

Every time a farmer markets a crop, a lot of fertility leaves his farm.

Here's how it all adds up, according to the National Plant Food Institute:

A 100-bushel corn crop, including stover, will take from the soil 150 pounds of nitrogen, 60 pounds of phosphate and 100 pounds of potash per acre.

A 40-bushel wheat crop will remove 66 pounds of nitrogen, 26½ pounds of phosphate and 40 pounds of potash per acre.

Three tons of alfalfa will take 140 pounds of nitrogen, 35 pounds of phosphate and 135 pounds of potash.

Fifty bushels of oats plus the

straw will drain off 50 pounds of nitrogen, 20 pounds of phosphate and 45 pounds of potash.

NPFI pointed out that unless these withdrawals are balanced with deposits of fertilizer based on soil tests, this drain of nutrient reserves can mean a sizable deficit in fertility each year.

## ARMOUR INDUSTRIAL BREAKS GROUND FOR NEW LABORATORY

Ground has been broken for a one-story Armour Industrial Chemical Co. research laboratory at McCook, Ill. M. E. Lewis, general manager of Armour Industrial Chemical, said the new laboratory and adjoining pilot plant will allow for expanded and intensified research programs designed to create new organic chemicals and improved processing techniques.

"We expect to develop better road building chemicals," Dr. M. R. McCorkle, technical director said. "In the mining industry we are looking for better methods of recovering phosphates which will be more economical than today's methods."

## \$20 MILLION CONTRACTS AWARDED TO FMC

Contracts totaling more than \$20 million were awarded by the Air Force Air Materiel Command to Food Machinery and Chemical Corp. acting for a joint venture with National Distillers and Chemical Corp. The contracts cover multi-million pound quantities of Dimazine, storable, high-energy liquid rocket fuel for supply to the Air Force.

## COLLINS IS NAMED MANAGER OF AGR. SALES BY GC

Thomas W. Collins, Jr., has been named manager of agricultural chemical sales for Allied Chemical's General Chemical Div., according to John L. Damon, director of agricultural chemicals.

With the division 25 years, Collins was agricultural chemical production supervisor before becoming assistant sales manager in 1951. Earlier he served as chief chemist of General's agricultural chemical plant at Baltimore, Md.



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## NEWS OF THE INDUSTRY

### BUS TOUR TO SOHIO

During the annual 3-day conference of the American Grassland Council, June 14-16 at Ohio State University, a bus tour was made to the plant of the Sohio Chemical Co. at Lima, Ohio. This national conference, under the joint sponsorship of the American Society of Agricultural Engineering, drew a large audience to Columbus.

Following a chicken barbeque served by the Allen County 4-H Clubs at the Sohio picnic grounds, the party made a conducted tour of the Sohio Chemical Co. plant to see the facilities for the manufacture of nitrogen chemicals for agricultural use.

### NEW CHARTERS

**Farm Chemical Services, Inc.,** Monroe, La., has been granted charter of incorporation. Capital

stock was listed at \$25,000.

**The International Fertilizer Co.** of Dover Del., has been granted Louisiana charter (permit).

## Associations Meetings

### CONFERENCE DESCRIBES SAFE USE OF FUMIGANTS

Kansas State University was host in June to a conference to encourage safe use of fumigants.

Believed to be the first on this subject at any college or university campus, the conference was held at the request of the Kansas State Board of Health and Kansas Department of Labor.

Harold L. Smith, state commissioner of labor, indicated his department's concern for the protection of workers, and said he

avored an educational approach, in preference to regulatory measures to bring about safer fumigation procedures.

Speakers included Dr. W. F. von Oettingen, consultant to the Public Health Service, Bethesda, Md.; S. J. Pearce, chief of the health research branch of the United States Bureau of Mines; James M. Sheehan of the Kansas Inspection Bureau; Dr. Geoffrey Martin, executive secretary of the K-State Board of Health; George B. Wagner of Pillsbury Mills; and William Schoenherr of Lauhoff Grain Co. Herbert Knutson of K-State was conference chairman.

### "PESTICIDES AND PUBLIC POLICY" ISSUED BY NAC

The National Agricultural Chemicals Association has prepared a 21-page pamphlet titled "Pesticides and Public Policy." The pamphlet outlines some of the broad aspects and implications of current controversies which affect everyone in the United States.

Sections describe the pesticide industry, the cranberry episode, the apple incident, congressional investigations, senate study on pesticides, National Academy of Sciences report, DDT trial in Brooklyn, and the margin of safety.

NAC said that a limited number of copies are available without charge. Prices for bulk quantities are available from the association, 1145 Nineteenth St., N.W., Washington 6, D. C.

### "CASH IN ON GRASS" WINS A BLUE RIBBON

One of the National Plant Food Institute's educational movies, "Cash in on Grass," captured a blue ribbon award in the American Society of Agricultural Engineers film competition this month.

In notifying the Institute, W. L. Maxwell, chairman of the 1960 subcommittee on movies, said "... we feel that 'Cash in on Grass' is superior and the scoring of the judges entitles the film to a blue ribbon which it justly deserves."

The film is a "how-to" motion picture designed to show farmers how they can utilize modern methods to increase the productivity of pastures, range and forage crops.

## Calendar

**Aug. 2-3.** Ohio Pesticide Institute Meeting, Ohio Agricultural Experiment Station, Wooster, Ohio.

**Aug. 3.** Annual Kentucky Fertilizer Conference, Univ. of Ky., Lexington.

**Aug. 10-11.** Northeast Regional Fertilizer Safety School, Park Sheraton Hotel, New York City.

**Aug. 15-23.** International Soil Science Congress, Univ. of Wis., Madison, Wis.

**Aug. 16-17.** Midwest Regional Fertilizer Safety School, National Safety Council Headquarters, Chicago, Ill.

**Aug. 21-25.** Canadian Fertilizer Association Annual Convention, Manoir Richieu Hotel, Murray Bay, Quebec, Canada.

**Aug. 25-27.** Southeast Regional Fertilizer Safety School, Wilmington, N. C.

**Aug. 25-27.** Mississippi Soil Fertility & Plant Food Council, 1960 meeting, Buena Vista Hotel, Biloxi, Miss.

**Aug. 28-31.** Soil Conservation Society of America Annual Meeting, Ontario Agr. College, Guelph, Ontario, Canada.

**Sept. 9.** Fall Agronomy Field Day, Univ. of Calif., Davis, Calif.

**Sept. 11-16.** American Chemical Society National Meeting, New York.

**Sept. 12-14.** Canadian Agricultural Chemicals Assn. Annual Meeting, Britannia Hotel, Lake of Bays, Muskoka, Ontario, Canada.

**Sept. 24-26.** Western Agricultural Chemicals Association 31st Annual Meeting, Palm Springs Riviera Hotel, Palm Springs, Calif.

**Sept. 25-28.** American Institute of Chemical Engineers Meeting, May Hotel, Tulsa, Okla.

**Sept. 27-29.** National Agricultural Chemicals Association Annual Meeting, Hotel del Coronado, Coronado, Calif.

**Sept. 29-30.** Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

**Oct. 5-6.** Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

**Oct. 10-11.** Four-State Aerial Applicators Conference, sponsored by Norkem Corp., Hotel Chinook, Yakima, Wash.

**Oct. 17-18.** National Safety Council, Fertilizer Section, National Safety Congress, Chicago, Ill.

**Oct. 25.** Assn. of Consulting Chemists & Chemical Engineers Annual Meeting, Shelburne Hotel, New York City.

**Nov. 2-4.** Fertilizer Industry Round Table, The Mayflower, Washington, D. C.

**Nov. 3-4.** Annual Convention, Pacific Northwest Plant Food Assn., Boise, Idaho.

**Nov. 9-11.** National Fertilizer Solutions Association, Peabody Hotel, Memphis, Tenn.

**Nov. 13-15.** 37th Annual California Fertilizer Association Convention, del Coronado Hotel, Coronado, Calif.

**Nov. 14.** Annual Sales Clinic of Salesmen's Assn. of the American Chemical Industry, Roosevelt Hotel, New York City.

**Nov. 15-16.** Second Annual Farm Chemicals Marketing Seminar, New York City.

**Dec. 5-9.** American Society of Agronomy Meeting, Morrison Hotel, Chicago, Ill.





Bethune, Griffith, Petersen, Jones, Ellison, Newnam, Truitt, Smith, Raney, Morris, Lee, Perrine, Stone, Pettitt, Maddux, Mark, Creel, Smith, McCargo, Burroughs and Dietz.

### FERTILIZER SAFETY GROUP HOLDS EXECUTIVE MEETING

The slate of candidates to be placed in nomination at the National Safety Congress, October 17, was announced at the June 9 meeting of the Executive Committee, Fertilizer Section, National Safety Council in Raleigh, N. C.

They include: For chairman, Ansell Raney, Phillips Chemical Co.; for vice-chairman, Gaither Newnam, Smith-Douglass Co.; and for secretary, John Mack, Ohio Farm Bureau Association.

John E. Smith, Spencer Chemical Co., presented a rough draft of a Fertilizer Safety Manual for discussion. It is expected that this first safety manual for the fertilizer industry will be made available in 1961.

Shown attending the Raleigh meeting are (l to r above) William M. Bethune, N. C. Labor Dept.; C. S. Griffith; Marshall E. Petersen; Emerson M. Jones; Mike C. Ellison; Gaither T. Newnam, Fertilizer Section secretary; Paul T. Truitt; James W. Smith; A. I. Raney, Fertilizer Section vice-chairman; Grayson B. Morris; Quentin S. Lee; Elmer C. Perrine, Fertilizer Section general chairman; W. A. Stone; A. B. Pettitt; Norman F. Maddux; John S. Mark; William C. Creel; John E. Smith; Stratton M. McCargo; E. O. Burroughs, Jr. and George F. Dietz.

### FFA TOLD AGR. CAREER OPPORTUNITIES EXPANDING

"Farms may be decreasing in numbers but career opportunities are expanding in agriculture through farm services," 700 California Future Farmers were told at their annual three-day state con-

vention at California State Polytechnic College.

Dr. Dan Chase, head of the agricultural business management department of Cal Poly and featured speaker at the convention, said that opportunities for young people in agriculture are not decreasing but merely arising in new areas.

"Sales, services and production supplies are the three areas of modern agriculture where real opportunities for young people exist," Dr. Chase said.

### FERTILIZER SECTION, NSC, ANNOUNCES CONGRESS PROGRAM

Program for meetings of the Fertilizer Section during the National Safety Congress and Exposition in Chicago, October 17-21, has been announced.

General chairman Elmer C. Perrine, of Nitrogen Div., Allied Chemical Corp., will open the session on Oct. 17. Following election of officers, Harry A. Veditz, Maryland Casualty Co., will describe mouth to mouth resuscitation.

"Disabling Injuries" is the topic of a panel composed of Mike Elliston, Mississippi Chemicals Corp.; E. J. Emond, Armour & Co.; R. L. Freemon, Butler Chemical Co.; Norman F. Maddux, Florida Nitrogen Co.; and C. L. Riley, O. M. Scott & Son Co.

During luncheon, on Oct. 18 delegates will hear an address by John Mock, sales manger, Protecto Seal Co.

Dr. G. G. Alexander, Industrial Medicine, will discuss "Small Plant Medical Program," and "Air Pollution" will be the topic of Edward J. Largent, of Reynolds Metal Co.

An executive committee meeting will be held on Oct. 19.

### NPFI EXECUTIVES



Key executives of the National Plant Food Institute, elected at the 1960 annual convention by the board of directors, are shown above. Left to right are Paul T. Truitt, president (re-elected); John W. Hall, vice chairman of the board of directors (president, Potash Co. of America); and Jefferson D. Stewart, Jr., chairman of the board of directors (president of Federal Chemical Co.). Also re-elected were W. R. Allstetter, vice president; Louis H. Wilson, secretary and director of information; and William S. Ritnour, treasurer.

### AWARD WINNERS



Richard E. Bennett (left), chairman of the board of directors, National Plant Food Institute (1959-1960) is shown with the 1960 winners of the organization's "Soil Management Award for Editors" contest, Ralph D. Wennblom, (center) Associate Editor of the Farm Journal, who received the award on behalf of his editor, Carroll P. Streeter, as winner in the category of magazines with more than 300,000 circulation; and William H. Kircher, (right), Editor-in-Chief of The Farmer, winner of the award for magazines with less than 300,000 circulation.



A gold-plated aerosol can is presented to George Fiero (left), president, Chemical Specialties Manufacturers Association, by Roger F. Hepenstal, president, Can Manufacturers Institute. Award was presented "on the occasion of the Sesquicentennial of the metal can, and in recognition of the contribution by the chemical specialties industry."



## NEWS OF THE INDUSTRY

### People

**The American Agricultural Chemical Co.** J. J. Repko has been named production superintendent for fertilizers and chemicals at the Buffalo, N. Y., plant. He had been assistant superintendent.

**American Cyanamid Co.** Edward H. Smythe has been appointed marketing director for the Agricultural Div. He succeeds Burton F. Bowman, who was



Smythe

recently named assistant general manager for the division. Smythe has been assistant marketing director for the division and in addition supervised the field sales force. In 1957 he joined American Cyanamid and served as merchandising manager.

Promotion of John H. Howard to sales manager for the Agricultural Div. was announced by Smythe. Howard had been regional manager for the midwest region. In addition to sales responsibilities for all Cyanamid animal and plant industry products, he will be responsible for sales training.

Named to replace Howard as midwestern regional manager is Dr. Max J. Harvey. The former assistant regional manager has been with Cyanamid since 1950.

**California Spray-Chemical Corp.** sales appointments: Raymond W. Smedul to assistant district manager, Midwest; Victor G. Ruh to branch manager at Omaha, Neb.; Ernst A. Sachse to branch manager for Wisconsin, northern Illinois and upper Michigan; and Richard E. Amack as branch manager for the Marion, Ohio, office.

Dr. Freeland E. Romans has been appointed a research chemist. He most recently was engaged in research work for Shell Development Co.

**Chemagro Corp.** James L. Carnes becomes technical field representative for the Eastern Region. He will make his headquarters at

the company's regional office in Richmond, Va.

**Commercial Solvents Corp.** R. Paul Jolley has been named manager of the Atlanta district



Jolley

office, according to W. Ward Jackson, vice president of sales. Jolley joined CSC in 1959 as a sales representative for the agricultural chemicals department. In his new capacity, Jolley will direct the sales activities of CSC salesmen handling industrial and agricultural chemicals, and animal nutrition products in Florida, Alabama, Georgia, South Carolina and North Carolina.

Before joining CSC, Jolley was with the Georgia Department of Agriculture as chief fertilizer control official.

**Diamond Alkali Co.** elections: J. A. Hughes and W. H. McConnell to senior vice presidents; W. A. Crichtley to treasurer; and R. H. Armour to controller.

J. W. Mantz, general manager—Soda Products Div., has been appointed director of trade development, a new position; A. B. Tillman, general manager—Electro Chemicals Div., was named general manager—Soda Products—Chrome Div., a combination of the Soda Products and Chromium Chemicals Divisions; F. W. Jarvis, general manager, Chromium Chemicals Div., was appointed general manager—Electro Chemicals Div.

**The Dow Chemical Co.** W. L. (Lew) Corbin has been named manager of the Resale Products Section of Agricultural Chemical Sales. In this capacity, he will be in charge of marketing all products sold through Dow's retail farm dealer organization. Corbin is being transferred to



Corbin

Dow headquarters in Midland, Mich., from the Chicago sales office where he has been manager of agricultural chemicals sales for that territory since 1955.

Promotion of Eugene E. Kenaga, a group leader on the agricultural chemicals research staff, to the rank of associate scientist, is announced by Dr. R. H. Goundy, vice president and director of research. Kenaga's work has been in the field of entomology since he started with Dow in the bio-chemistry research laboratory in 1940.

**Eastman Chemical Products, Inc., Chemicals Div.** John H.



Sanders

Sanders, formerly regional sales manager at Cleveland, Ohio, has been named sales manager of the Chemicals Div. He succeeds Guy A. Kirton, who will concentrate on international sales of Tennessee and Texas Eastman products.

Realignment of the Eastern and Mid-West regional sales territories has been made by the Chemicals Div.:

The region formerly supervised by Sanders, consisting of the North Central and Southeast portions of the United States, has been divided between the Mid-West and Eastern regional offices.

R. Clay Dubberly has been placed in charge of the Cleveland office, serving northern Ohio. George O. Trabue will supervise the new sales office soon to be opened in Buffalo.

Kenneth E. Cox has been appointed district manager in the Skokie office, and H. Lynn Francisco will take charge of the St. Louis office replacing Cox.

A new office soon to be opened in Kansas City will be managed by Robert M. Morrow. C. P. Echerd becomes district sales manager in the New York office.

**Food Machinery and Chemical Corp.** reports that Roger C. Corwin has joined its International Chemical Development and

Operations Dept. His responsibilities will primarily be centered in development of foreign subsidiaries and licensees. He had been with Richardson Co.

**W. R. Grace & Co.,** Davison Chemical Div. Appointment of William M. Rohrer as assistant sales manager, agricultural chemicals, is announced by D. N. Hauseman, vice president. Rohrer joined Grace on graduation from Yale with a major in industrial administration



Rohrer

and has had wide experience in the organization.

From assignments in corporate research and the Peruvian Desk in the parent company, Rohrer went first with Naco Fertilizer Co. and then Thurston Chemical Co., Grace subsidiaries, as purchasing director. He went to the Davison Div. in 1954 first in purchasing, later in domestic sales of triple superphosphate and export sales of agricultural chemicals.

**Hercules Powder Co.** Robert Wier III becomes assistant director of purchases, and Curtiss S. McCune is named division purchasing agent, with responsibility for the purchase of essential materials.

**Hooker Chemical Corp.** Dr. Clifford C. Vurnas, chancellor of the University of Buffalo, has been elected to the Hooker board of directors. He replaces Dr. Earl L. Whitford, who had earlier requested permission to resign from the board following his retirement from the company as senior vice president on February 29.

Charles C. Hornbostel, recently elected to the new position of director of finance, announced appointment of A. Richard Perry as controller.

Jay P. Eggert has been named works manager of the new multi-million dollar synthetic phenol plant to be constructed near South Shore, Ky., by the Durez Plastics Div.; and Cyril J. Harke becomes production superintendent of the

Hooker Chemicals Limited chlorine-caustic soda plant at North Vancouver, B. C. Harke has been technical supervisor at the plant for the past year.

**Monsanto Chemical Co.'s** Plastics Div. has promoted Alfred W. Andrews Jr. to associate director of engineering. He will have full responsibility for administration of the division's engineering Dept. He has been assistant direc-

tor of the department since 1956.

O. Lee Ryser, branch manager of the Inorganic Chemicals Div. Houston sales office, has been named assistant district sales manager for the Atlanta district. His headquarters will remain in Houston. Concurrently, it was announced that William W. Low joined the Houston staff as district sales representative for Louisiana.

**Olin Mathieson Chemical**



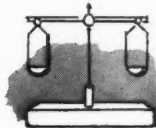
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## NEWS OF THE INDUSTRY

**Corp.** The newly created post of director of construction has been filled by Ian D. Ritson, former project manager for Perini Ltd. in Toronto, Canada.

Dr. Herman A. Bruson has been named vice president for research of the Chemicals Div. Previously director of research, organic chemicals, Dr. Bruson holds 290 patents in various chemical fields.

**Sohio Chemical Co.** H. J. Coleman, sales manager, has announced that James W. Bibbins has been appointed manager of agricultural sales. Bibbins joins Sohio after having served as branch manager for Northrop, King & Co. for the past two years. Before his association with Northrop King, he served with Central States Seed Service Co. as vice president in charge of sales.

**Stauffer Chemical Co.** Harold L. Straube has been named Eastern sales manager of the agricultural chemicals division.

**Texaco, Inc.** Dr. C. Loyal W. Swanson, chief agronomist, was recently elected to membership in the University of Illinois Chapter of Gamma Sigma Delta, the Honor Society of Agriculture.

**Texas Gulf Sulphur Co.** Election of Guy T. McBride, Jr., as vice president has been announced by Claude O. Stephens, president. After having acted as a chemical engineering consultant to the company for several years, Dr. McBride joined Texas Gulf on June 1, 1958



McBride

and a year later was named manager of the Research Dept. He was formerly associate professor of chemical engineering and dean of students at The Rice Institute.

**Velsicol Chemical Corp.** re-

ports appointment of Dr. Warren H. Zick as agronomist-herbicide specialist in the company's Research and Development Dept. In his new position he will be responsible for the coordination of biological aspects of research and development on new products. Zick was formerly with the U. S. Borax Research Corp. where he served as an agronomist, herbicide specialist and plant nutritionist.

New sales representative for the Agricultural Chemicals Div. is Curtis N. Overton.



Overton

representative for California Spray-Chemical Corp.

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**FLEXO PRODUCTS, INC.**—Westlake, Ohio



**Wisconsin Alumni Research Foundation.** Milwaukee life insurance executive Donald C. Slichter has been elected president of the board of trustees. Other officers elected by the WARF board of trustees include Walter B. Frautschi of Madison as secretary and treasurer; Bernard Mautz of Madison as vice president and assistant secretary; and William R. Kellett, Neenah, as vice president and assistant treasurer.

## Government

### AGRICULTURAL EXPORT VOLUME SETS NEW RECORD

Volume of U. S. agricultural exports in the 1960 fiscal year that ended June 30 set a new record, according to an announcement by Secretary of Agriculture Benson.

Volume of agricultural exports that moved under cash sales also was the largest in history, the secretary said.

On a value basis, export sales for dollars in fiscal year 1960 came to a near record \$3.3 billion, compared with \$2.4 billion the previous year.

Over 70 per cent of the year's exports represented dollar sales. Somewhat less than 30 per cent were under special export programs, mainly Public Law 480.

Total agricultural exports on a value basis for the year appear to have reached \$4.5 billion. Export value in fiscal 1959 was \$3.7 billion. Record shipments abroad were made of feed grains, soybeans, protein meal, poultry meat, tallow and cottonseed and soybean oil.

### FARM CASH RECEIPTS DOWN TWO PER CENT

Cash receipts from farm marketings, which totaled \$11.4 billion during the first five months of 1960, were 2 per cent below the corresponding period of 1959, according to the June Demand and Price Situation report.

Lower average prices more than offset slightly larger volume of marketings. Livestock and livestock product receipts were \$7.5 billion for the five-month period, down about 1 per cent from 1959.

Cash receipts from crop sales totaled \$3.9 billion during the five months, nearly 4 per cent less than a year earlier.

### ENCYCLOPEDIA OF U. S. MINERAL RESOURCES

An all-new edition of "Mineral Facts and Problems," an encyclopedic reference on metals, non-metals, and mineral fuels and the industries that produce them, has been published by the Bureau of Mines.

Covering the history, technology and uses of the Nation's minerals, the new thousand-page volume, designated as Bulletin 585, describes many recent advances in mineral development.

Eighty-seven individual chapters, as well as the complete indexed book, can be purchased from

the Superintendent of Documents, Washington 25, D. C. Price is \$6 a copy.

Among the individual chapters are Clays; Diatomite; Gypsum; Lime and Calcium; Magnesium and Magnesium Compounds; Molybdenum; Nitrogen Compounds; Phosphate Rock; Sulfur and Pyrites; Talc, Soapstone and Pyrophyllite; and Vermiculite. These chapters are priced at 10 cents each.

### WAY CLEARED FOR USE OF MH-30 ON FLUE-CURED CROP

Recent announcement of grade loan rates for the 1960 flue-cured tobacco crop by USDA has "offici-

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## NEWS OF THE INDUSTRY

ally cleared the way for use of MH-30 on the flue-cured crop," according to Dr. H. Douglas Tate, manager of agricultural chemical research and development for Naugatuck Chemical Div., United States Rubber Co.

"The statement on loan rates made it clear that there would be no discrimination against flue-cured tobacco treated with MH-30 either through a price discount or by tagging, Dr. Tate said.

### Chemicals

#### CONTROL OF DUSTING IN FERTILIZER MANUFACTURE

Use of a line of aliphatic cationic chemicals for the control of dusting in fertilizer manufacturing is recommended by Armour Industrial Chemical Co.

Developed originally to prevent caking of hygroscopic materials, Armoflo 65, 66 and 48 have been found to display dust control properties as well.

The Armoflo is sprayed in liquid form at the time the fertilizer is mixed to assure complete spreading of the chemical. The particles of fertilizer are coated by the Armoflo. The fertilizer will not set up in a hard cake, nor will it dust because fine particles adhere to the Armoflo coating, Armour said.

About one pound of the material provides caking and dust control for one ton of fertilizer. Additional information may be obtained by

CIRCLING 264 ON SERVICE CARD

#### KORLAN OK'D FOR CHINCH BUG CONTROL IN FLA. LAWNS

Dow Chemical Co. reports that Korlan 24E has been accepted for use in controlling chinch bugs in lawns in Florida.

High insecticidal activity and long-lasting residual action, coupled with low toxicity to warm-blooded animals, makes Korlan an ideal product for homeowner control of the chinch bug pest, according to Dow.

In tests on lawns in the Miami area, Korlan treatments were applied to lawns having an infestation of 49 chinch bugs per square foot of turf. A count made six

weeks following treatment showed an average of only 8 bugs per turf unit.

#### "ALP" TO BE MADE BY COLLIER CARBON

Collier Carbon and Chemical Corp. announced in July that it has entered into a phosphoric acid manufacturing arrangement with The Bunker Hill Co. Under a secrecy agreement, Bunker Hill will manufacture exclusively for Collier a highly concentrated green acid having "unique characteristics." A new process and plant design developed by Collier will be used in the operation at Bunker Hill's recently completed phosphoric acid plant in Kellogg, Ida.

According to R. H. McGough, general manager of Collier's agricultural sales, the unique properties of the new product, to be named "ALP" (anhydrous liquid phosphate) will enable it to find wide application in the manufacture of high analysis fertilizers.

Initial production of ALP, scheduled for early 1961, will be used by Collier in the manufacture of its liquid fertilizer, 8-24-0, and new higher analysis liquid and solid phosphates.

#### SEVIN CLEARED BY USDA FOR CORN EARWORM CONTROL

Sevin insecticide has been cleared by the USDA for corn earworm control, according to R. H. Wellman, manager, Crag Agricultural Chemicals, Union Carbide Corp.

"This new use for Sevin will benefit growers who need a substitute for DDT to control earworms in sweet corn," Wellman said.

The carbamate insecticide also has been labeled for control of cucumber beetles, squash bugs, flea beetles, pickleworms and melonworm on cucumbers and summer squash. It may even be applied on the day of harvest of cucumbers and summer squash without exceeding the residue tolerance of 10 ppm, the company said.

New Mexico and Arizona extension services have added Sevin to their 1960 list of compounds recommended for cotton insect control.

#### MH-30 HELPS YOUNG CITRUS FIGHT FROST DAMAGE



Dr. Charles Hendershott, left, of the Univ. of Fla. Citrus Experiment Station, examines with a citrus grower young orange trees that have been exposed to freezing weather. The tree at left, which survived the cold spell, had been sprayed experimentally with maleic hydrazide.

Two-year tests just completed by researchers of the Florida Citrus Commission and the University of Florida Citrus Experiment Station at Lake Alfred indicate that MH-30, a growth regulant made by Naugatuck Chemical division, can increase resistance of young citrus trees to frost damage.

Sprayed on test trees at the start of the frost-threat season, it threw the trees into temporary dormancy, and in this non-growing condition the trees were able to withstand lower temperatures.

"We know that young trees can be damaged if exposed to temperatures of 26 degrees for as little as four hours," said Dr. Charles Hendershott, who is directing the citrus commission's "freeze" research program.

"MH-30 lowers that damage level, and we are now trying to learn to what extent it will protect a tree."

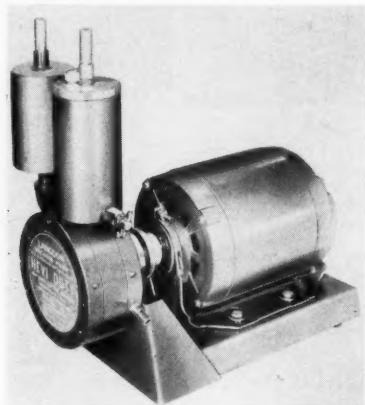
Specially-constructed, walk-in freeze chambers will be used in a new series of tests that will shortly get underway at the University of Florida's Citrus Experiment Station.

It is also planned to test the chemical on mature, bearing trees that have been stripped of their leaves by freezing temperatures.

The researchers will not decide whether to recommend the chemical to growers until further tests are made.

## Equipment Supplies

### LANGDON PUMP



Introduction of an improved Langdon Vacuum Pump has been announced by Hevi-Duty Electric Co. Operating at 1725 rpm, the new pump has a capacity of 35 liters per minute (free air) and produces an ultimate vacuum of 50 microns.

Redesigned since its purchase from Langmar Corp. of Chicago, the pump is used primarily for vacuum organic distillations. It is also used for transferring gases, sampling, dehydration, testing and other vacuum applications within the operating range.

The Langdon uses no springs. Vanes are activated by a combination of centrifugal and hydraulic forces.

A bulletin fully describes the pump. Obtain yours by

CIRCLING 265 ON SERVICE CARD

### NEW SPRAY SYSTEM

A new-type nozzle and spray system, which produces a spray with a mayonnaise-like consistency, holds great promise for solving the problems of drift in herbicides and other chemicals, reports Southwest Agricultural Institute.

Dr. Judd Morrow, director of the Institute, said that the new system utilized an intimate mixing of oil, herbicide and water in such a manner that the spray of mayonnaise-like consistency is produced. The new invert emulsion spray, tested under a variety of wind conditions, is reported to possess low-drift characteristics. It can be used

in airplanes, helicopters, ground and water vehicles, as well as hand sprayers.

### PALM-SIZED pH METER

Precise, reproducible readings within  $\pm 0.02$  pH accuracy are obtained with the Electrion, reports Sel-Rex Instruments, Inc. Weighing only  $3\frac{3}{4}$  pounds, the Electrion is a palm-sized pH meter which uses one "combination" electrode.

To obtain its readings, the unit uses easily-connected solid ground; tubes needing no "breaking-in time" and operates from 115V line to eliminate warm-up time.

For a technical data sheet  
CIRCLE 266 ON SERVICE CARD

### NEW SEWING ATTACHMENT

Development of a new sewing attachment to simplify and speed closure of multiwall paper shipping bags has been announced by Bemis Bro. Bag Co.

The Sew-Rite attachment, which is mounted on sewing pedestal, permits the bag to adjust itself properly before engaging the sewing machine, consumes less operator time by actually carrying the bag to the sewing machine, and reduces thread and needle breakage due to improper handling of bag by operator during sewing, Bemis said.

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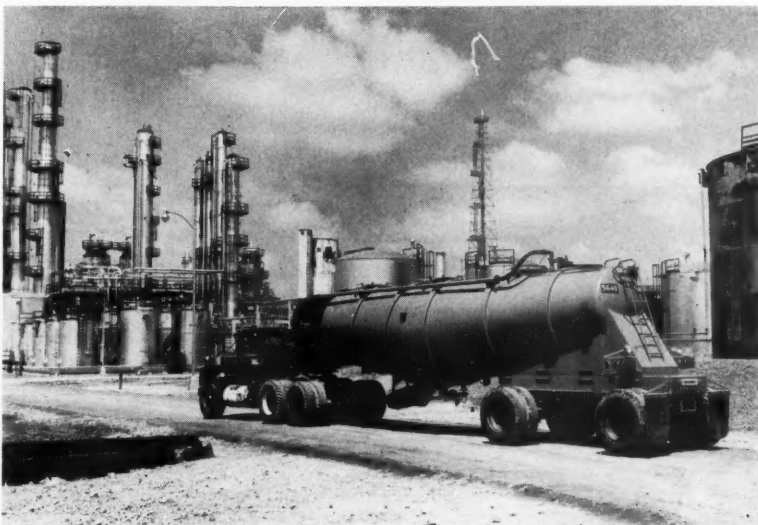
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**FOR SALE:** Bemis 3 bucket electro-mechanical open mouthed bagger, Series #6107, contact parts—stainless steel, very accurate, available July 1st—\$500. C. Roy Curtis & Son, Inc., Marion, N. Y.

## TRAILMOBILE SERVES DOUBLE DUTY



During the spring season, liquid nitrogen fertilizer is hauled by Schwerman Trucking Co. from a refinery in Lima, Ohio, to farm distribution outlets in 16 states and Canada. Following this spring service, the Trailmobile DC pneumatics are converted and again put into service moving dry bulk cement at Paulding, Ohio.

## NEWS OF THE INDUSTRY

### Suppliers Briefs

**Buell Engineering Co., Inc.** Jack L. Schumann has been elected president and a director, succeeding J. A. McBride who will continue as a board member and consultant. Schumann, 46, joined the Buell organization in 1946 as a sales engineer. Ten years later, he joined Vitro Engineering Co. and subsequently served as a vice president.



Schumann

**Chase Bag Co.** has named Richard J. Price chief industrial engineer. He will direct the company's industrial engineering department, now headquartered at St. Louis, Mo. Formerly with Continental Can Co., Price is a graduate of Ohio State University.



Price

**Goodyear** has named Transicold Corp. of Montebello, Calif. as exclusive distributors for Van Tanks, new lightweight collapsible fabric containers designed to transport anything from milk to liquid fertilizers.

The Van Tanks convert empty



truck trailers into fluid-carrying conveyances, ending the days of the "dead-head" run. In the photo a 2,750-gallon rubberized fabric container spreads lazily across the inside of a large trailer.

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**Owens-Illinois.** John R. Murphy, former manager of the plastic bag operation of the Multiwall Bag Division, has been promoted to general sales manager of the division. He succeeds W. H. Morris, who has been promoted to vice president of the Mill Div. in charge of container board sales. Murphy joined the division in 1954 as a salesman in the upper New York State area.



Murphy

Philip Williams, assistant general sales manager for the Multiwall Bag Div., has been named sales promotion and advertising



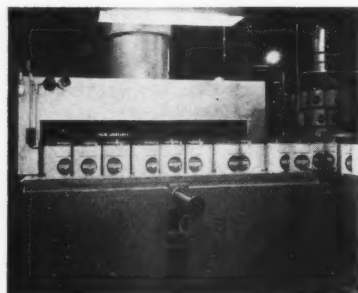
Williams



O'Neal

manager, in a new position created to fill the growing need for sales promotion in this field. J. C. O'Neal, Jr., production supervisor at the Valdosta, Ga., plant will succeed Williams as assistant general sales manager.

**Rheem Manufacturing Co.** vice president E. F. Paquette reports a new development in the manufacture of lined steel pails. Technical development, engineering and installation of equipment for centrifugal application of specification linings to steel pails, manufactured in high volume, has been completed in Rheem container plants.



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# PATENT REVIEWS

F  
C

By Dr. Melvin Nord

## FERTILIZERS

**U. S. 2,927,691**, issued March 8, 1960 to Otto C. Chapman and Arnold W. Dean, assigned to Virginia-Carolina Chemical Corp., describes a process for the concentration of phosphate minerals from oils of the type found in the Florida pebble phosphate field by a double flotation process.

The principal feature of the invention is an improved process for deoiling the rougher phosphate concentrate produced in the first step of the double float process. Instead of using mineral acids for this purpose, deoiling is obtained in the present invention by the use of water-immiscible organic solvents such as kerosene or diesel oil.

The small amounts of solvents appear to aggregate the oily fatty acid in droplets or globules in such a manner that the rough concentrate is effectively deoiled, the oil being removed from the mixture in the water washing after the treatment with the organic liquids.

**U. S. 2,927,692**, issued March 8, 1960 to Clinton A. Hollingsworth, Karl F. Schelling, and Jordan L. Wester, assigned to Smith-Douglass Co., Inc., describes a process for the separation of silica from phosphatic material by flotation.

**U. S. 2,927,851**, issued March 8, 1960 to Harold W. Wilson, describes a process for the production of an acidic fertilizing material for alkaline soils, derived from the slags from a reverberatory copper refining process.

The slag is treated with concentrated sulfuric or phosphoric acid to provide the acidity. Chemical fertilizers are dissolved in the water which is added to the slag.

**U. S. 2,928,728**, issued March 15, 1960 to Lloyd E. Weeks and assigned to Monsanto Chemical Co., describes a process for producing an ammonium phosphate solution from wet process phosphoric acid prepared from spent alkylation acid, with minimized sludge forming characteristics.

A stabilizing agent is added to

the wet phosphoric acid to minimize sludge formation. It consists of a polyoxyethylene thioether such as *n*-decyl mercaptan condensed with an average of 8.5 moles of ethylene oxide per mole of mercaptan. These are non-ionic surface-active agents.

## PESTICIDES

**U. S. 2,927,882**, issued March 8, 1960 to Leo Trademan, Marshall A. Malina, and Louis P. Wilks, assigned to Velsicol Chemical Corp., provides dry formulations of phosphate insecticides stabilized with polyhydric alcohols, such as ethylene glycol. These prevent deterioration of the insect toxicant ingredient during storage, and are not deleterious to plant life.

**U. S. 2,927,883**, issued March 8, 1960 to John F. Hosler and William B. Hardy, assigned to American Cyanamid Co., discloses the nematocidal properties of *N*-trichloromethylthio-1,2,3-benzotriazole.

This compound is produced by the reaction of benzotriazole and perchloromethylmercaptan in an aqueous alkaline medium.

**U. S. 2,928,766**, issued March 15, 1960 to Irving Rosen and assigned to Diamond Alkali Co., describes a method of killing nematodes by treatment with 3-halo-2,3-dihydrothiophene-1,1-dioxide. These products also have a high degree of herbicidal action.

**U. S. 2,928,862**, issued March 15, 1960 to Joe R. Willard and John F. Henahan, assigned to Food Machinery and Chemical Corp., discloses the pesticidal properties of certain phosphorus esters, including the bis (*S*-(dialkoxyposphinyl) mercapto) alkanes and bis (*S*-(dialkoxyposphinothioyl) mercapto) alkanes.

These compounds possess unique pesticidal activity, in that they function as effective ingredients in insecticidal compositions, acaricidal compositions, and ovicidal compositions.

**U. S. 2,929,739**, issued March 22, 1960 to Everett E. Gilbert, Julian A. Otto, and John J. Donleavy, assigned to Allied Chemical Corp., discloses certain fluoro-substituted phosphonic ester compounds which have insecticidal and miticidal properties.

**U. S. 2,929,846**, issued March 22, 1960 to Charles W. Gates and Henry D. Glenn, assigned to United States Rubber Co., describes a method of making a fungicidal substance believed to be a poly (ethylene bis thiuram sulfide), by the action of phosgene on nabam (i.e. disodium ethylene bis dithiocarbamate).

The product is effective against an unusually wide variety of fungi on plant and animal tissues.

**U. S. 2,930,730**, issued March 29, 1960 to Carleton B. Scott and assigned to Collier Carbon & Chemical Corp., discloses a fungicidal composition consisting of a nitrogen base salt of dimethyltetraathio-phosphoric acid.

## CORRECTING NUTRIENT DEFICIENCY IN PLANTS

**U. S. 2,929,700**, issued March 22, 1960 to James P. Bennett, describes a process for treating growing-in-soil plants deficient in a nutrient metal such as iron, zinc, copper, manganese, or molybdenum.

The element lacking is added in available form, along with a toxicity reducing agent for the metal, consisting of the constituents of sulfite-pulping spent liquor.

## HERBICIDES

**U. S. 2,929,702**, issued March 22, 1960 to Angelo J. Speziale and assigned to Monsanto Chemical Co., describes a method of selectively inhibiting the germination and preemergent growth of grasses from seeds in contact with soil.

The soil is treated with an herbicidal amount (1-15 lbs. per acre) of an alphachloroacetamide having a heterocyclic substituent on the amide nitrogen. ▲



# PEST REPORTS

F  
C

By Kelvin Dorward\*

**D**URING June the black cutworm caused damage in widely scattered areas of the United States. In Maryland a severe outbreak occurred on young corn throughout the state. Treatment was required in many fields and some replanting was necessary. Corn in Pennsylvania, corn and tobacco in localized areas of Ohio and corn in many areas of Indiana were seriously infested. Damaging infestations in corn were reported from areas of Illinois, Missouri, and Oregon.

Black cutworms or other cutworm species also were of concern, often requiring control measures, in western Iowa, and in local areas of Wisconsin and Virginia. Nebraska reported damage as high as 50 per cent in 40 per cent of cornfields examined in 8 counties.

Localized treatments for *armyworm* were required in wheat in Illinois, Missouri, Oklahoma, Kansas and Nebraska.

Infestations of the *alfalfa weevil* were heavier than normal during late June in three eastern Oregon counties. Poor control was obtained with insecticides applied at recommended dosages. In localized areas of Idaho and Montana, the insect caused heavy injury and treatment was required to prevent excessive damage. The pest was common on alfalfa throughout Utah with the condition becoming progressively worse during the month of June. Some growers cut the crop for control while several thousand acres of alfalfa were treated. Although larval populations were dropping by mid-June in Colorado, counts were still running 2,000-3,000 per 100 sweeps in Garfield and Delta counties. In several areas, first cuttings of alfalfa were made early to reduce populations.

The alfalfa weevil was also active in the eastern part of the United States. Although pupation was well underway by mid-June in New York, some localized fields still had counts of up to 100 larvae per sweep. In Jefferson and Berkeley counties, West Virginia, ton-

nage yield of alfalfa was reduced at least 50 per cent by the alfalfa weevil.

In these two counties the weevil and *pea aphid* also reduced the food value of the alfalfa to a point where total loss to the first cutting was estimated to be 75 per cent. The weevil was also active in Massachusetts, Pennsylvania, Maryland and Delaware. Five North Carolina counties were reported infested for the first time in June. Dawson county, Nebraska, was reported infested during the month thus giving further eastern spread of the insect from the west.

Although *grasshoppers* were generally light during June, several areas did report some damage. In California, considerable damage occurred to barley plantings in the Tule Lake game refuge, Siskiyou county. Some control was being planned by individual operators in McCone county, Montana, and threatening populations were found in some areas of western North Dakota.

In eastern Wyoming, counts up to 35 per square yard were recorded on rangeland while in Box Elder county, Utah, counts as high as 300 per square yard were recorded. Grasshopper populations up to 50 per square yard were found on conservation reserve lands in Alamosa county, Colorado. Damaging populations of grasshoppers were present on forage crops, cotton, gardens, and roadsides in many sections of Texas. In Swisher county, checks in a limited area showed populations as high as 60 per square yard in fields and 300 along roadsides.

The *meadow spittlebug* was quite heavy on legume hay in southwestern Pennsylvania during mid-June. Less spraying was carried out than in the past, probably due to the cost. Rosetting of alfalfa plants was common throughout Berkshire county, Massachusetts, and adults were common in red clover and alfalfa fields in most sections of Maryland. Very heavy spittlebug infestations were reported from eastern Indiana counties and counts up to 10 per sweep

were recorded from west and west-southwest Illinois.

Among the fruit pests *aphids*, the *oriental fruit moth* and *mites* caused concern in various areas. By the latter part of June the apple aphid populations in Maine remained spotted but were on the increase. Some increase was noted in the Carbondale, Illinois area and close watching was advised. In New Jersey the rosy apple aphid was more numerous than for several years. In areas of New York, Indiana, and Ohio the insect was causing damage in untreated orchards.

The oriental fruit moth caused heavy terminal damage in untreated orchards of Orleans county, New York.

*European red mites* were building up generally by the latter part of June in Maine. In untreated orchards populations were on the increase in central Ohio and in the Vincennes, Indiana, area. *Tetranychus* spp. were building in localized areas of Delaware and Illinois.

The *pecan nut casebearer* was reported as damaging in the Carlsbad, New Mexico area and in Sterling county, Texas, where insecticides were applied in the commercial pecan growing areas. Heavy infestations were noted in the Lake Charles, Louisiana, area.

The *bollworm* was perhaps the most important cotton insect during the latter part of June. In the Coastal Plains counties of South Carolina the insects were becoming a major problem. Four per cent of the squares were recorded as being damaged in Orangeburg county. Egg deposition was high in Georgia, Alabama, Mississippi and Louisiana. Activity was on the increase in many areas of Texas.

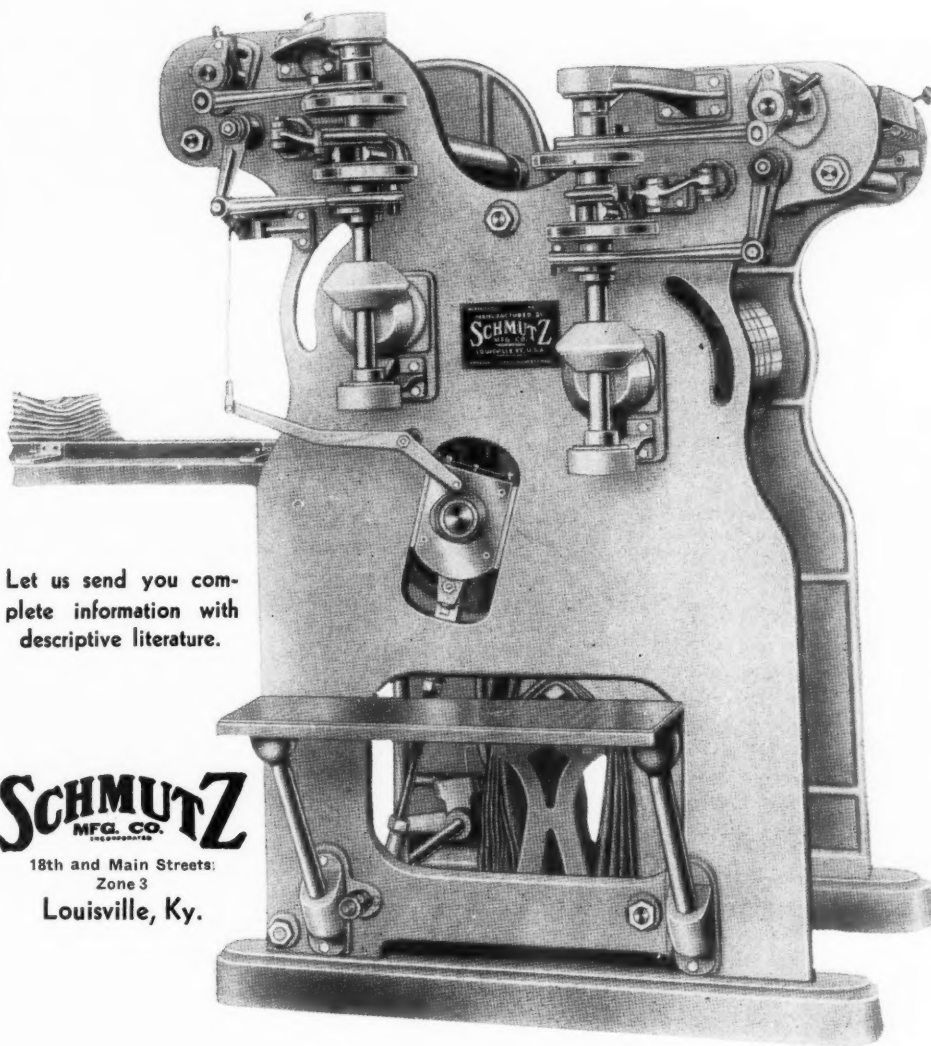
Although *boll weevil* activity was generally light throughout its range, some increase was noted by late June.

The *face fly* continued to spread and be a problem on livestock. States reporting the insect for the first time in June were Connecticut and Tennessee. ▲

\* Chief Staff Officer, Survey & Detection Operations, Plant Pest Control Div., Agricultural Research Service, USDA.

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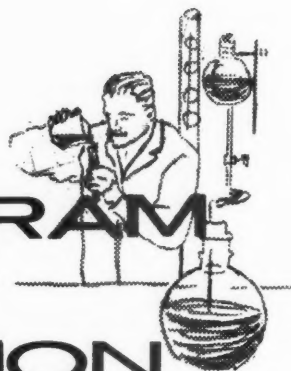
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*The Magruder Check Fertilizer*

# SAMPLE PROGRAM

*and its Relation to*

# PLANT OPERATION



**O**UR INDUSTRY is losing every year an estimated 6 to 8 millions of dollars as overages. Can something be done to reduce this loss? The National Plant Food Institute thought it could. About three years ago, a collaborative study was started in which participated the Association of Official Agricultural Chemists and the Association of American Fertilizer Control Officials.

Two nationally known statisticians designed the experiment. Three state chemical control laboratories and the U. S. Department of Agriculture contributed their services on a voluntary basis. This can properly be described as one of the most comprehensive studies made in our industry to improve sampling and chemical analytical procedures as one means of reducing the annual losses represented by overruns.

Among the integrated phases of the NPFI Project, which was organized around the concept that the cost of over-formulation as currently practiced by industry could be substantially reduced if the precision and accuracy of sampling and analytical procedures in state and industry laboratories could be improved, is the so-called Magruder Check Fertilizer Sample Program, which was discussed by E. M. Glocker of W. R. Grace and Company.

With the help of the Association of American Fertilizer Control Officials (AAFCO) and the W. R. Grace Chemical Research Center, the analytical returns of all sub-

scribing laboratories were subjected to a statistical analysis. At the end of the first twelve months an improvement in precision and accuracy of the analytical results was evident. About 140 laboratories scattered over the entire United States subscribe to this series.

The Magruder Sample work typifies one phase of an attack on plant control problems. It shows how one phase of the variation in the operation can be measured for the purpose of improving performance within each of our laboratories and among all the laboratories. Each laboratory's conformance to the accepted average of a monthly sample of fertilizer is measured, and some minimum variation is unavoidable. As laboratories farther and farther from the accepted average correct their biases, a trend to narrower limits of variation among all the laboratories occurs.

The same thing holds for each laboratory's ability to obtain good check results. As laboratories come closer and closer to the average range between duplicate determinations a trend toward better precision is set in motion.

A chart will show laboratory accuracy and precision, where, by accuracy we mean freedom from bias and by precision we mean reproducibility. It is not realized that accuracy and precision are not synonymous, but are two measures of performance which can be quite independent of one another. A chart with a vertical scale of % available  $P_2O_5$  will show a) the accepted average for % available  $P_2O_5$  as determined by 140 laboratories as a horizontal line, b) the scatter of the average results re-

Presented at the National Plant Food Institute meeting, The Greenbrier, White Sulphur Springs, W. Va., June 13, 1960.

ported by the laboratories as successive points on or around the average line, and c) a vertical line through each average which indicates the range between duplicate analyses.

*Thus we can see that we have measured three things, the available  $P_2O_5$  level of a given lot of fertilizer, the variability among laboratories around the level fixed by the lot, and the variability around each laboratory's average analysis.*

#### DETERMINING AVERAGE

Let us turn our attention to the factors which determine the average for a particular lot of fertilizer. Some of these factors are controllable and are called fixed factors; some are random and therefore not fixed. The fixed factors, if absolutely controlled, would determine the absolute level of performance of a process. The random factors keep us from seeing the absolute figure for this level of performance. An exact level of available  $P_2O_5$  could be achieved by exact (but impossible) control of all factors including such ones as phosphate rock quality, acid concentration, reaction temperature, curing time, moisture content, and many others. The available  $P_2O_5$  we read is not the absolute figure, but a result from a possible group of such results which cluster around the true figure and which are affected by variations in rock purity, operator skill, depth in the curing pile, sampling, sample splitting, analysis and many other factors. Our experience tells us how much effect some of these have. Some factors differ in effect from plant to plant. Any contribution to the dispersion can be measured, and should be measured beforehand, if we suspect that it is keeping us from economical production or causing bad quality or any other problem.

When measuring variation we must keep in mind the statistical facts of life. Among these is the one which requires that much of the arithmetic connected with variation must be done on squared terms before we get to the interval on our measurement scale which spans random variation. The measurement scale distribution of random variation around the average of a group of results is measured in terms of the standard deviation. It is the square of the

standard deviation, that is the variance, which is used in the examination of whether particular process factors are significant and, if so, how significant. The total variance is the sum of the variances contributed by all the random factors we can name plus many more.

#### MAGRUDER PROCEDURE

Samples must be taken which permit the suspected source of trouble to be measured separately from other sources for comparison with the total variance. Next, assume that the suspected trouble spot accounts for half of the total variance. How much will the span of randomness be reduced on our measurement scale? The variance of our trouble spot is the square on one leg of a triangle, all the remaining variances sum to the square on the other leg, and the total forms the square on the hypotenuse whose square root is the hypotenuse itself and is the total standard deviation. Therefore, even if we can eliminate half of the variance, the remaining half has a square root which is more than 70% of the original standard deviation.

A trouble spot can be significant even when its variance is considerably less than half of the total variance. Reduction or elimination of the trouble may seem to give a disappointingly small improvement in our operation. We may be tempted to ignore it and turn to another suspected source of trouble. This too may be significant and yet fail to impress us just as the first one failed. If we continue this way we will eventually reach the end of our list of things to test without obtaining the improvement to which our tests were supposed to guide us.

This pitfall can be avoided if we recognize that by reducing all the significant random factors which are practical to reduce, the remaining leg of our triangle will cover a suitably small span of randomness.

Knowledge of variances can be applied in numerous ways. For instance, we all know that an average of several results is better than just a single result. Not only this, the average is a predictably better estimate of what is going on. How much better is the average? The variance of an average is equal to the variance of the individuals from which the average was obtained divided by the number of individual results which were averaged. It is

obvious that the easiest way for us to prevent confusion in looking at groups of averages is to be consistent in the size of the groups of results taken for averaging. In the Magruder Check Sample, it was possible to state the limits within which laboratory averages should fall only after the number of individual results which were averaged was made consistent for all laboratories.

Averaging is done mechanically rather than arithmetically every time we composite samples prior to analysis. Here again comparison of several results can be misleading unless consistent composites are formed.

Knowledge of the variances of alternate analytical methods or other tests is essential for determining the cost of equal precision. If there is a dollar cost for Test A and there is a different dollar cost for Test B, and the variance of A is smaller than B, we can make the variance of B as small as A by dividing by the proper number. The closest whole number to our divisor is N, the number of tests we must perform by the less precise method in order for the average of the set to equal the precision of a single test by the more precise method. Thus, for equal precisions we have a dollar cost for one analysis by the best method versus N times the dollar cost per analysis by the second method.

#### THE BLENDER AND VARIANCE

When uniformity of a product is obtained by blending, knowledge of the variance of the batches going into the blender is essential. Capital costs can be kept down by purchasing the closest size blender rather than a larger one which would produce uniformity well beyond that required or even measurable by regular methods of analysis. Conversely, knowledge of the variance can be used to assure that a blender will be adequate.

The Magruder Check Fertilizer Sample Program covers some of the steps involved in plant control. In the future other questions connected with sampling and sample handling can be covered. Already there is indication of improved analytical performance in some cases. As the program continues it will be possible to evaluate the rate of over-all improvement in laboratory accuracy and precision. ▲



# Monitoring FLUORIDE CONTENT

of air, water and vegetation

By CHARLES R. McHENRY  
and HOYT CHARLES\*

*For more than 40 years, Cyanamid has been one of a number of companies mining phosphate rock in an area in Brewster, Fla. For a long time phosphate mining and processing stood near the top in Florida's economy, both in dollar value and employment. Over the years, citrus growing, cattle raising, and of course tourists and retired Americans have transformed the state to such an extent that the phosphate industry, while still substantial, no longer finds itself so prominent.*

*As the areas around the mining sites turned residential or became citrus groves, phosphate companies were increasingly criticized for allegedly polluting the air and streams, and imperiling the health of humans, animals, and plant life.*

*Cyanamid was resolved that its processing would have to be strictly controlled to prevent or mitigate any air pollution. Upon the approval of the project by management, consultation began with Cyanamid air and water pollution control specialists to ensure that the latest developments for controlling pollutants were embodied in the plant engineering designs.*

\*Mr. McHenry is with the Central Medical Department, New York, and Mr. Charles, the Agricultural Division, Brewster, Fla., American Cyanamid Company. Adapted from a speech presented at the American Pollution Control Association meeting, May 22-26, 1960 in Cincinnati.



**I**N ORDER to reduce emission of gaseous fluoride to a minimum, certain control measures were embodied in Cyanamid's new processing plant. Samples are collected from the soil, streams, vegetation and air.

## Atmospheric Sampling

Air samples are collected to determine the gaseous and particulate fluoride content. Dust fall stations are utilized to evaluate the settleable solids and wash-out effect of the rain.

Four continuous dynamic air sampling stations are positioned around the TSP plant.

- No. 1—One mile West
- No. 2—1100 feet South-Southwest
- No. 3—1000 feet North-Northeast
- No. 4—4500 feet Northeast.

The locations were chosen on the basis of prevailing wind direction, location of other plants in the area, and accessibility. The sampling devices are located in a steel cabinet mounted on a post. The air sampling inlet is located about six feet above the ground. It is protected from rain and dust impingement action of the wind by a metal guard that extends out and down over the inlet opening. The sample site locations are in areas that have a heavy ground cover of permanent vegetation and are away from any immediate area of influence such as unpaved roads of farms.

The dynamic air sampler is a device that collects simultaneously particulates in excess of 0.2  $\mu$  in size and gaseous fluorides. The particulate collector consists of a filter holder and a membrane filter. The gas scrubber is constructed of a two-liter side-arm vacuum flask and a sintered glass impinging tube. 750 ml. of 0.1 N NaOH solution is used as a collecting medium. A dry gas meter is used to measure the air



**Left:** Dynamic air sampler is a device that collects simultaneously particulates in excess of  $0.2 \mu$  in size and gaseous fluorides. **Above:** Four water sampling stations are used to monitor the plant effluent in the South Prong of the Alafia River.



**A meteorological sampling station** was located at a convenient site near the TSP plant. Data on relative humidity, wind direction and speed, ambient temperature and barometric pressure are obtained.

flow rate. A Gast carbon vane pump is used to take the sample. Air samples are taken over a seven-day period. In order to facilitate the program and minimize the chance of contamination, a duplicate set of filter holders and flasks are utilized. The flask and filter holder are cleaned and prepared in an air-conditioned laboratory. Quick-disconnect polyethylene connectors are utilized to facilitate the transfer of sampling devices. The field transfer of the equipment takes about three minutes at each station.

In evaluation of particulate fluoride fall-out and wash-out effects of rainfall, 18 static type samplers are utilized. These samplers are located at various distances and directions from the plant. The locations were carefully chosen and consideration was given to: wind direction, distance from the TSP plant and other plants, adequate ground cover, activity such as farming and traffic, unpaved roads, and accessibility.

#### Static Sampling

One static sampling station is located 20 miles west-southwest of the plant. This station is utilized as a control, since it is located in an area of minimum influence by all plants in the general area.

The static samplers consist of a plastic bucket-type collector positioned in a metal container mounted on top of a seven-foot post. A small amount of water is kept in the plastic collector to minimize loss by wind action. Copper sulfate is added to the water to inhibit the growth of algae and other micro-organisms. Sample collection is done on a monthly basis. Two static sampling stations were set up to evaluate the possible effect of locally generated dust on collection rates at seven-foot levels. At each station, a static sampler is located at a level of seven and 30 feet above the ground. One sampler is located 4000 feet south-

west of the plant and the other at the control site, 20 miles southwest of the plant. The results of the sampling, which cover the period of approximately one year, show that local wind action, farming practices, and automobile traffic do not significantly affect the dust fall as determined by measurements at the 30-foot height. It is well established that dust fall rates 30 feet above the ground are not significantly affected by dust generated locally through human and natural activities.

#### Stream Sampling

Four water sampling stations are used to monitor the plant effluent in the South Prong of the Alafia River. Two of the sampling stations are electrically operated and collect a 25 ml. sample every 15 minutes. The other two stations are hydrostatically operated and collect about 15 ml. of water every five minutes. These small samples are collected over a period of one week and stored in a large plastic bottle. A representative portion of the large composite sample is taken at the end of each week for chemical analysis. The sample is analyzed for pH, turbidity, and fluoride content.

#### Meteorological Equipment

A meteorological sampling station was located at a convenient site near the TSP plant. The following chart recording instruments are used to obtain meteorological data on: relative humidity, wind direction and speed, ambient temperature, and barometric pressure. A temperature lapse rate recorder is installed on an abandoned stack located approximately one mile from the plant. Temperature sensing elements are mounted at the ground and at the top of the stack, which is 225 feet high. A dip stick rainfall

## TECHNICAL REVIEW

### Monitoring FLUORIDE (Continued)

gauge is located near the Analytical Laboratory, which is about 0.5 mile from the plant.

The wind direction and speed indicator is mounted in an area where representative wind currents can be measured. Readings from this instrument have been checked with those from a similar instrument located at a position six miles to the north. A comparison of the data from both instruments shows an almost identical recording pattern. For the sake of wind rise compilation, the results are identical. A sling psychrometer is used to check the calibration of the relative humidity and ambient temperature recorder twice each week.

#### Vegetation Sampling

The vegetation sampling program has been accomplished in two phases. The first sampling was exploratory and was done on a transect basis, spoke-wise around the plant. Vegetation sampling sites were located as shown in Table I relative to the Triple Superphosphate Plant.

TABLE I

<i>Direction from Plant</i>	<i>Distance in Miles</i>
North	1, 1½, 2
Northeast	4
East	¼, ½
Southeast	¼, ½, 1, 2, 4
South	¼, ½, 1, 2, 4, 6, 8, 10, 50, 100
Southwest	¼, ½, 1, 2, 4, 6, 8, 10
West	¼, ½, 1, 2, 4, 6, 8, 10, 25
Northwest	¼, ½, 1, 5, 7

The extent of significant plant influence was established by this phase of the sampling program.

In the second phase of the program, a combination grid and spoke sampling pattern was then established to obtain more detailed knowledge of the conditions around the plant. The grid pattern encompassed an area six miles to the west, three miles to the north and east, and two miles to the south of the plant. Vegetation sampling sites were located on one mile centers throughout the grid pattern. The sample sites described under the exploratory sampling pattern above, and located outside the area covered by this grid pattern, were retained in this sampling program. The spoke pattern, superimposed over the grid, covered an area five miles to the south and ten miles to the west of the plant.

Control sample plots were selected at distances of 50 and 100 miles to the south of the plant. The general conditions of soil type, type of vegetation, climate, rainfall, etc. are the same for the control plots as for the sample sites around the plant. Fluoride analyses were made on soil at the control site, and on various types of vegetation.

Wire grass (*Aristida* spp. and *Sporobolus* spp.) was selected as the indicator plant because it could be found at practically all of the chosen sampling sites. This selection was made after carefully analyzing the growth characteristics and comparing the results of

fluoride analyses with those of the other natural vegetation growing at the same location. Wire grass is a narrow-leaf grass whose physical structure gives it the name wire grass. Because of the structure of the grass, it would support a minimum amount of dust on the outside and it can be washed for analysis very easily.

It was established through comparative sampling, that the fluoride levels in washed broad leaf grasses are consistently about 25 per cent higher than those found for washed wire grass at the same site per unit of weight.

At each sampling site, approximately 80–100 grams of wire grass is collected in one composite sample. This composite is later divided to provide a washed and an unwashed sample for analysis. Recently matured foliage from the center of each wire grass stool is gathered together in one hand and cut from the plant at a point four to six inches from the ground. Eight to ten plants are sampled at each site to obtain a composite sample. Some older, dead foliage is generally included in each cutting. All foliage that is dead at the cut surface is removed to assure uniformity in sample collection.

#### Transporting to Preparation Room

Polyethylene bags of 0.0015 gauge, 9½-in. x 18-in. in size, are used to transport the samples to the Preparation Room and Laboratory. The bags are coded with a china marking pencil and the code is entered on a field data sheet along with appropriate comments, including observations on any unusual condition that might exist. The samples are kept shaded while in transit to the Preparation Room.

Upon receipt, the field sample is inspected and the average length of foliage, degree of necrosis, and other pertinent observations are recorded. The sample is then divided into two equal parts. One portion is washed before further processing and the other is processed unwashed. All samples are ground in a Standard Model No. 3 Wiley Mill using a 1.5 mm. mesh screen. First the unwashed sample is ground and then the mill is carefully cleaned before grinding the washed sample.

#### Washing Procedure

In the washing procedure, the grass sample is swirled back and forth 20 times in a basin containing 10 gallons of water and six to eight c.c. of liquid detergent (low fluoride content). This procedure removes the adhering particulate matter from the grass. In the preparation of special samples for analysis, i.e., citrus foliage, the leaves must be hand washed, and in most cases scrubbed lightly with a bristle brush, to remove the adhering particulates.

After the particulate material has been washed from the sample, it is rinsed in a basin of clean water to remove the detergent solution. Finally, the sample is rinsed with a clean water spray. The excess water is shaken off, and the foliage spread on a work table until the surface water has evaporated. It has been demonstrated by the use of a magnifying scope that this procedure will remove most of the adhering particulate matter from the samples.



### Samples Go to Lab

After preparation of the samples is completed, they are delivered to the Laboratory where the analytical work is started immediately. The number of samples collected during a day is determined by the capacity of the Analytical Laboratory. At no time are samples collected and stored, in any form, for future analysis. We have investigated various methods for storage of samples including: quick freezing, lime slurry, storage in a sealed glass jar, and a combination of the two methods. All these methods have been rejected because it was shown that fluoride is lost during storage. The loss, while usually within 10 to 15 per cent for periods up to 10 to 15 days, was not found to vary in a predictable manner, and, therefore, storage of the samples was not employed. The Analytical Laboratory equipment and procedures were expanded to handle a larger volume of samples more efficiently.

Soil samples were collected at representative sampling sites to determine the fluoride concentration in the top six inches of soil. These data were used in the final evaluation of the results.

### Vegetation

Two aliquots of each sample are weighed (approximately 10 g.) in cleaned and stoppered weighing bottles. One sample is dried in an oven at 105° C. for 24 hours to determine the moisture content. The other sample is transferred to a clean platinum evaporating dish (50 ml. capacity). One gram of low fluoride (1-3) ppm. F. slaked lime is added. The mixture is slurried with water, using a clean glass stirring rod.

The limed sample is placed under infrared light which reduces the mass to a char. The platinum dishes containing the charred sample are then placed in a muffle furnace where it is held at 600° C. until ashing is complete, as indicated by a white or light gray ash. Calcination of samples in the presence of lime and

large amounts of silica may cause conversion of fluorine to a form refractory to the distillation procedure in the final assay. In order to break up this refractory complex, the sample is fused with 5.0 g. of sodium hydroxide pellets over a burner for 15 minutes. After fusion, the molten mass is allowed to cool and then it is dissolved by a small amount of water in a beaker on a hot plate. The dissolved sample is then quantitatively transferred to the distillation flask for final assay.

### Soil

The soil sample (approximately 200 g.) is dried in an oven at 105° C. for 48 hours to remove the free moisture. It is then ground in an attrition mill.

The large powdered sample is then rolled, quartered, and a 20 gram representative portion is taken for fluoride analysis. If the fluoride content of the sample is estimated to be below 500 ppm. F, or if there is no basis to make an estimate of concentration, a one gram sample is weighed for analysis. If the concentration is estimated to be greater than 500 ppm. F., a 0.5 gram sample is used. The weighed sample is quantitatively transferred to the fluoride distillation flasks (modified Claissen) with water and 75 ml. of concentrated sulfuric acid is cautiously added. The fluoride is distilled from the sample by means of steam and a pot temperature of 165° C.  $\pm$  3° C. Approximately 500 ml. of distillate is collected and maintained alkaline to phenolphthalein with sodium hydroxide. The distillate is made to a known volume and an aliquot transferred to a clean distillation flask for final assay.

### Air

*Filter Sample.* The filter membrane is carefully transferred from the filter holder to a platinum evaporating dish. Two ml. of distilled water and one gram of low fluoride slaked lime are added. The lime is slurried and brought into contact with the entire surface of the filter. The filter is then reduced to a char under infrared light. A muffle furnace is used to ignite the char for ½ hour at 600° C. The ash is slurried with water and quantitatively transferred to the distillation flask for final assay.

*Scrubber Sample.* The sample is adjusted to a known volume and one-half of the sample is then evaporated on a hot plate to a volume of approximately 40 ml. The sample is alkaline to phenolphthalein and should be kept in this condition to prevent the loss of fluoride during the evaporation. The concentrated sample is then quantitatively transferred to the distillation flask for final assay.

### Water

There are no special preparation procedures for the determination of fluoride in water samples. A 50 ml. sample is transferred to a Claissen flask for final assay.

### Distillation of Samples

In the methods of sample preparation described



Four continuous dynamic air sampling stations are positioned around the plant. Their locations were chosen on the basis of prevailing wind direction, location of other plants in the area, and accessibility.

AUGUST, 1960



## TECHNICAL REVIEW

### Monitoring FLUORIDE

(Continued)

above, the different types of samples were processed to the stage where the sample was introduced into the modified Claissen flask. At this stage, the slurry is alkaline. The chlorides are precipitated by the addition of the silver perchlorate solution dropwise. When chlorides are precipitated in the alkaline state with silver perchlorate, a brown silver oxide complex is formed at the end point of the reaction. One ml. of silver perchlorate solution is added after the end point is reached to insure complete reaction of all the chlorides present. Three or four glass beads are added to the flask to minimize bumping during the distillation.

The flask is placed on the distillation rack and steam distilled by means of steam from a generator and an electric heater on the "pot" of the still. The distillation temperature is controlled at  $135^{\circ} \pm 3^{\circ} \text{C}$ . At least 200 ml. of distillate is collected at the  $135^{\circ} \text{C}$ . temperature. If the samples contain excessive quantities of gelatinous silica, 500 ml. of distillate are collected. Continued use of the Claissen flask will cause the inside of the pot to become etched. This condition, if excessive, will allow the fluorides to combine with the glass and be released very slowly in the distillation step. The flasks are replaced when recovery check analyses show that the fluoride "holdup" in the flask is greater than 5 per cent.

#### Titration of Fluoride

For distillates that contain relatively high fluoride content (0.05–10 mg. F.) in the total sample, a direct titration can be performed in a porcelain crucible using the Alizarin Red-Strong solution as the indicator and the standardized thorium nitrate-strong solution.

Pipet an aliquot of the distillate into a 500 ml. porcelain crucible and make to 200 ml. with water. Add one ml. Alizarin Red-Strong solution. Adjust the pH of the solution by the use of sodium hydroxide solution to the pink color end point of the indicator. Then add four ml. of 0.05 N HCl and titrate to a faint pink color with the standard thorium nitrate solution. From the ml. of standard thorium nitrate reagent used, the equivalent fluoride concentration can be calculated.

For distillates that contain less than 0.05 mg. F. in the total sample, a double titration procedure is used to estimate the fluoride content. A 25 ml. aliquot is placed in one of a matched set of high form Nessler tubes. (A smaller aliquot is taken if the fluoride concentration in the aliquot exceeds three micrograms of F.) One ml. of (0.01 g./l.) Alizarin Red indicator is added. The solution is then diluted to approximately 45 ml. with water and the pH adjusted by titrating the solution with the 0.05 N NaOH solution. When a faint pink color has been reached, the volume of NaOH used is noted. The solution is discarded and another 25 ml. aliquot is added to a clean Nessler tube and one ml. of the (0.01 g./l.) indicator

is added. The volume is adjusted to approximately 45 ml. with water and HCl .005 N is added to give the resultant solution an equivalent pH of two ml. of 0.05 N HCl. The sample is then titrated with thorium nitrate-weak solution, to a peach blossom pink end point. A distilled water blank is prepared by adding 45 ml. of water, one ml. (0.01 g./l.) Alizarin Red indicator and two ml. of 0.05 N HCl to a matched Nessler tube. A volume of thorium nitrate solution equivalent to that which was required for the sample is added to the blank. The blank is then titrated to the comparable end point of the sample. From the amount of standard fluoride used, the fluoride content can be estimated for the sample. Reagent blanks are determined throughout the entire procedure, including sample preparation, distillations, and titration for each sample.

## RESULTS

### Air Samples—Dynamic and Static

Data from these samples had been correlated with plant operating conditions, wind direction, and other meteorological conditions to estimate air concentration of particulate and gaseous fluorides under various conditions. Observations were made on the physical condition of vegetation in the vicinity of the sampling stations and air concentrations were estimated in an attempt to determine whether there was a cause and effect relationship. Additional engineering controls are being installed in the plant and the background air concentrations will be used to evaluate the improved plant operating condition.

### Samples of Vegetation

The analytical results of vegetation sampling are affected by a large number of variables, for example: physiological conditions of the plant, such as rate of tissue growth, transpiration rate, etc.; rainfall; amount of sunlight; wind direction; concentration and duration of exposure; and time of day, month, or season of year. For these reasons, it is necessary to interpret the results of vegetation samples with care.

### Summary

The five-year air pollution study was started in 1956 to measure the effectiveness of the built-in control devices. The study, still in progress, includes: continuous monitoring air and water sampling studies, vegetation surveys, and a meteorological monitoring program. Results of the study have been used to determine a fluoride emission rate for the plant that will be consistent with the air pollution laws of the state of Florida and the maintenance of desirable conditions around the plant site. Additional control equipment is presently being installed to accomplish this objective. To date, American Cyanamid Co. has spent one and four-tenths million dollars in the study to set plant operating standards and for pollution control equipment.

The air pollution monitoring program has been an indispensable tool in defining the extent of the problem at Brewster and in determining necessary control measures for maximum production without air pollution. ▲

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American Cyanamid Co., New York City.....	10	Midstate Machinery Co., Flexi-Liner Div., Decatur, Ill....	—
Armour Agricultural Chemical Co., Atlanta, Ga.....	—	Miller Chemical and Fertilizer Corp., Baltimore, Md.....	—
Ashcraft-Wilkinson Co., Atlanta, Ga.....	15,37	Monarch Mfg. Works, Inc., Philadelphia, Pa.....	52
Baker, H. J. & Bro., Inc., New York City.....	—	Monsanto Chemical Co., St. Louis, Mo.....	—
Baughman Mfg. Co., Jerseyville, Ill.....	63	Owens-Illinois, Toledo, Ohio.....	11
Bemis Bro. Bag Co., St. Louis, Mo.....	—	Phillips Chemical Co., Bartlesville, Okla.....	—
Chase Bag Co., Chicago, Ill.....	—	Plibrico Company, Chicago, Ill.....	—
Clark Equipment Co.—Construction Machinery Div., Benton Harbor, Mich.....	—	Potash Co. of America, Washington, D. C.....	Second Cover
Clupak, Inc., New York City.....	3	Rapids Machinery Co., Marion, Iowa.....	47
Commercial Solvents Corporation, New York City.....	—	Raymond Bag Corp., Middletown, Ohio.....	—
John Deere Chemical Co., Tulsa, Okla.....	—	Reade Mfg. Co., Inc., Jersey City, N. J.....	51
Dicalite Dept., Great Lakes Carbon Corp., Los Angeles, Calif.....	41	St. Regis Paper Co., New York City.....	Third Cover
Duval Sulphur & Potash Co., Houston, Tex.....	15	Schmutz Mfg. Co., Louisville, Ky.....	55
Ferro Corp., Agricultural Div., Cleveland, Ohio.....	43	Shuey & Company, Inc., Savannah, Ga.....	52
Dave Fischbein Co., Minneapolis, Minn.....	37	Sohio Chemical Co., Lima, Ohio.....	—
Flexo Products, Inc., Westlake, Ohio.....	48	Spraying Systems Co., Bellwood, Ill.....	—
Geigy Agricultural Chemicals, New York City.....	—	Spencer Chemical Co., Kansas City, Mo.....	1
W. R. Grace & Co., Davison Chemical Div., Baltimore, Md..	5	Stedman Foundry and Machine Co., Inc., Aurora, Ind.....	48
Grumman Aircraft Engineering Corp., Bethpage, L. I., New York.....	—	Successful Farming, Des Moines, Iowa.....	Back Cover
Highway Equipment Co., Cedar Rapids, Iowa.....	—	Swift & Co., Chicago, Ill.....	—
Hollingsworth & Whitney, Div. of Scott Paper Co., Chester, Pa.....	23	Tennessee Corporation, Atlanta, Ga.....	7
Hough, The Frank G. Co., Libertyville, Ill.....	9	Texaco, Inc., New York City.....	8
Industrial Marking Equip., Brooklyn, N. Y.....	—	Texas Gulf Sulphur Co., New York City.....	—
International Minerals & Chemical Corp., Skokie, Ill.....	16, 17	Thomas Alabama Kaolin Co., Baltimore, Md.....	—
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International Paper Co., New York City.....	—	U. S. Phosphoric Products, Div. Tennessee Corp., Tampa, Florida.....	21
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## FC wears a Black Jacket

At the recent NPFI Greenbrier meeting, two of the FARM CHEMICALS staff were engaged in conversation with a man universally recognized as a leader in the fertilizer industry. During the course of the conversation, that gentleman stated, "Did you notice that this year for the first time I'm wearing a *white* dinner jacket? Up to now, my wife used to tease me about wearing a black jacket in the hope that I'd finally give in and wear the same kind of jacket 'everyone else wears'."

One of the FARM CHEMICALS fellows jokingly replied, "But Mr. —, if you had continued to wear that black jacket, possibly many of the other men here would have climbed on the band wagon and followed your lead."

Our host answered, "You know, our company wore a 'black jacket' for several years. Some time ago we introduced a grade of fertilizer that until then was unknown in the industry. Now practically everyone is wearing the same 'black jacket'."

The question we asked ourselves was, "Isn't that what FARM CHEMICALS is doing—wearing a 'black jacket'?" After all, prior to January 1959, no publication serving this industry was really doing any constructive work in the marketing-management end of this business. And today FARM CHEMICALS is still the only publication wearing that black jacket.

But we're confident the other trade books will follow our lead. For just a cursory view of the industry should convince even the outsider that if fertilizer and pesticide companies, in addition to making products, could make more *money*, many of the industry ills would be cured.

Viewed from any angle, fair profits are a virtual necessity. Our whole free enterprise system is founded on the profit motive. In fact, social order and the four freedoms are assured through the protection of government agencies which are, in turn, totally supported by corporate and personal profits. But for fear of being accused of emotionalism, we'd like to examine for a moment the more practical aspects of a fair profit.

If an industry or individual company hopes to

produce goods that are steadily more capable of satisfying consumer needs and wants, then that industry or company must grow. Yet certainly there is no other source of growth capital than profits. Can you borrow funds from a bank or institution without showing evidence of profit potential to repay the loan? Can you attract outside equity capital without profits to assure the investor a fair return for his risk? And excluding the institutional or investor sources, can you hope to purchase new machinery, expand physical assets, or introduce new products without profits to pave the way?

So it takes a fair profit to grow. But what does it take for a farm chemicals manufacturer to make a fair profit? It takes *consumption*—consumption on terms that are fair to *both* the consumer and the manufacturer. This means scientific marketing, and scientific marketing is FARM CHEMICALS' "Black Jacket."

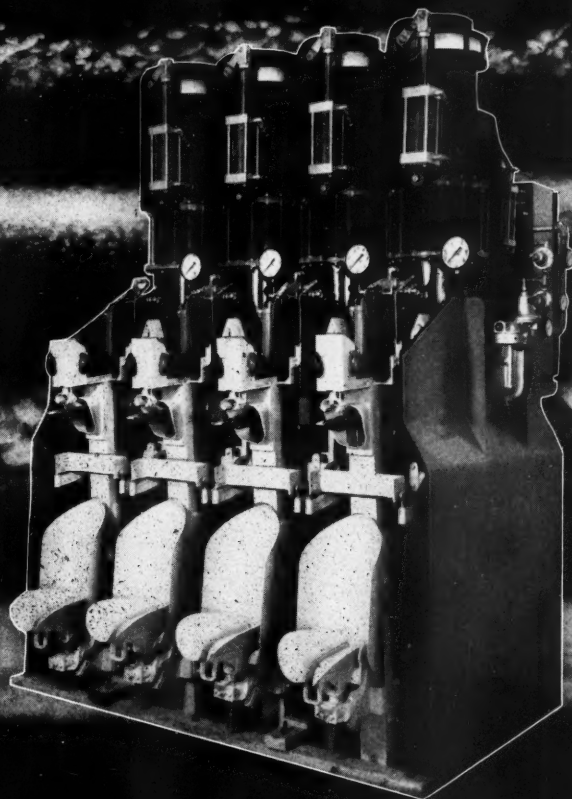
Yes, in the midst of all those "white jackets" FARM CHEMICALS wears the only black one. But mark our words, in the farm chemicals publishing business, black jackets are going to be high fashion before very long.

### Organizing for Action

What are the principles behind sound marketing organizations or departments in fertilizer and pesticide manufacturing firms? Why have some of the leading companies in this industry embraced the marketing concept and how have they put it to work for them? Decisions on policy must be made. What are they? How do you arrive at the most profitable of them?

These questions and many more will be considered at the 1960 FCMS scheduled for New York City, November 15 and 16. Last year's meeting was principally devoted to the philosophies of the Marketing Concept. This year the Seminar will be entitled "Organizing for Marketing Action", and will present the steps to putting that Concept to work for you.

Be sure to reserve November 15 and 16 on your calendar. More complete details about the 1960 meeting and a registration form will be included in the September issue. Watch for it.



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